Whole School Approaches to Sustainability

Exemplary practices from around the world

Whole School Approaches to Sustainability: Exemplary Practices from around the world

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The report serves as one of the key inputs for the WSA International hybrid Conference held on the 28 - 30th of March 2022, Lunteren, The Netherlands, organised by SME Advies.

With the help of multiple practitioners connected to the school examples which are mentioned in each case study, this report has been prepared by researchers Rosalie Mathie of The Norwegian University of Life Sciences, and Arjen Wals of Wageningen University in The Netherlands[a].

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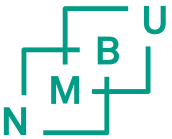

Norwegian University of Life Sciences

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Preamble

This report provides provides an analysis of practical examples of the use of a WSA to help achieve Sustainable Development Goal (SDG) 4 - Quality Education for all, and all the other connecting SDGs. Distinct but inevitably connected and reinforcing features of a WSA are highlighted: *Curriculum design assessment and development; Pedagogical innovation; School management and leadership; School-community relationships; Professional development of all staff; and Institutional practices – The school as a 'living laboratory' for experimenting with healthy, equitable, democratic, and ecologically sustainable living.*

Schools engaging with a WSA from sixteen countries (Japan, The Netherlands, Mongolia, USA, South Africa, Cyprus, Norway, Canada, India, Hongkong, UK, Finland, Türkiye[a], Nepal, Uruguay, and Kazakhstan) have contributed to the report. They have provided critical examples of exemplary practices[b] that not only highlight success stories, best-practice principles, and strategies, but also struggles, set-backs and challenges and approaches to overcome them.

A few words on privilege and access: While this report makes a conscious effort to bring together a diverse range of school examples from around the world, the countries and schools represented are limited[c]. Some of the cases feature schools that have a more privileged starting point than others, with regards to for example funding and access to support. Moreover, some schools may not be accessible to those who live under less favourable circumstances, or do not have the means to join a school such as the ones included in this report. Additional examples are still needed that come from different cultures and societies, as each will have unique insights that are impossible to capture in just one 'quick scan' best practice report. Moreover, one cannot ignore the inequities and disparities that are apparent within the sustainability-oriented education context. Especially when many students witness and experience conflict, violence, social and environmental injustice, and extreme income disparities. Here, the policy-environment has a key role in making sure that attention is paid to inequality, and that extra support is provided to those schools and communities who are merely trying to survive daily as issues of inclusivity are an essential aspect of sustainability. One also cannot ignore that the 'green school' movement is still seen as transforming only a minority of schools as Tannock[1] discusses: "Annette Gough[2] estimates that "generally a third or less" of schools in any given country are currently participating in green school programs, "with a domination of early childhood and primary schools." Unless the best Green Schools and Eco-Schools can become prefigurative spaces for developing pilot models that lead to the transformation of the whole school system, the risk is that this kind of climate and environmental education can end up becoming what so often happens to progressive forms of education: a specialist form of schooling accessible only to a privileged few children and young people"[3]. It is vital we ensure that the momentum and traction holistic approaches such as a WSA are experiencing today is utilised to develop sustainability-oriented education and sustainable development that is inclusive and beneficial to all.

The lay-out of the report is as follows: First, a general introduction to a WSA to Sustainability is provided. The subsequent section contains the in-depth case-studies, preceded by a short explanation of how cases were selected, analysed, and reported on. The closing section consists of a meta-analysis of the case studies with key lessons learnt and suggestions for strengthening the WSA from a policy perspective.

a: As requested by the contributors, we are using 'Türkiye', instead of 'Turkey' in this report.

b: Disclaimer – Writing this report was a joint effort involving teachers and researchers from around the world. While we have all aimed to be critically reflective, this report is foremost gathering insight instead of presenting empirical studies as not all the schools have been visited directly. The main focus of the report was to gather up to date experiences and knowledge directly from schools engaging with a WSA, with the overarching aim to stimulate the discussion that will take place at the WSA international conference and beyond.

c: Limited in both the timeframe for collecting contributions and limited in space available in this report to include more examples. In the end 17 schools took part, not all of which are published in this printed edition. All 17 case studies will be shared with the conference delegates and made available online at https://doi.org/10.18174/566782.

Contents

I Introduction

Whole School Approaches to Sustainable Development – A Transition Perspective

A Whole School Approach (WSA) provides a framework for re-orienting and redesigning education considering emerging global sustainability challenges[4]. It invites a holistic, systemic, co-creative and reflexive effort by all stakeholders involved in education to meaningfully engage students in complex sustainability challenges. *Holistic* here refers to the attempt to explore and address sustainability issues from multiple perspectives in an integrated and relational way. *Systemic* refers to considering key aspects of the education system simultaneously (curriculum, pedagogy and learning, professional development, school-community relationships, school practices, ethos, vision and leadership). *Co-creative* refers to the inclusion of multiple voices and multiple stakeholders in the development of the approach within a given context. Lastly, *reflexive* refers to the need for continuous learning, monitoring, evaluating and re-calibrating in light of a world that is in constant flux.

A WSA is not a tool or a prescription for implementing a topic or a specific agenda like ESD, but rather a means to encourage schools to use the WSA as a thinking tool for educational innovation generally. A WSA is a concept in which multiple themes can be simultaneously addressed within the overarching umbrella of 'sustainability' or 'sustainable development,' not by reducing them to 'learning tasks', but as entry points to a different way of working and living. As such a WSA represents a transition perspective, in that it does not intend to optimise mainstream education, but rather it seeks to re-orient it by anchoring it in different principles and values that contribute to education that is more responsive, relevant, responsible, and re-imaginative, in light of urgent global challenges[5].

Just like 'business-as-usual' is no longer an option in times of obvious unsustainability, 'education-as-usual' is not an option either. This has also become apparent in international policy-arenas. In the first half of 2021, the United Nations Economic Commission for Europe (UNECE) strategic document on ESD[6], also, the United Nations Education, Scientific and Cultural Organisation (UNESCO) ESD for 2030 Berlin declaration[7], and even more recently, the European Commission (EC) Council recommendation on learning for environmental sustainability[8], all highlighted the potential of a WSA. It appears that the WSA or the broader 'Whole Institution Approach', is becoming a central concept in policy-discourse around education and SD. It should be acknowledged that the concept as such has been around in educational practice for quite some time already. Historically, the WSA has surfaced since late last century in related but distinct fields such as Education for Health and Wellbeing, (Global) Citizenship Education and, indeed Education for Sustainable Development (ESD). In the context of sustainability, the WSA can be traced back to the 1990's as well, when educational reforms started to engage more in holistic integrated sustainability agendas highlighting how environmental issues interconnect to multiple of social and political issues[9].

UNESCO describes the WSA as a key thinking tool for ESD "to enable learners to live what they learn and learn what they live"[10]. Tilbury & Galvin's (2022) recent EC input paper, A WSA to Learning for Environmental Sustainability, listed key starting questions that need to be addressed by the school community: community: "What is taught (curriculum; hidden curriculum)? Where does learning take place (classroom; school buildings; campus; community)? Who do we learn from (teachers - school staff parents - partnerships)? How is learning taking place (action learning; participatory learning; critical reflective learning; values clarification)? Is there a culture of sustainability? Can staff, students and wider community see the alignment between what, where, who, and how?"[11] The EC input paper also concludes with a 5-point summary, based on Henderson & Tilbury's[12] characterising effective WSA's as:
"***relevant*** - to school's mission; national educational priorities; community identity; as well as environmental priorities of the region.
resourced - with expertise and support in sustainability and learning for sustainability; physical resources and technologies to make the transition; and medium-term finance to execute plans.
reflective - skilled in critical reflection and evaluation at all levels; developed critical thinking competences in its staff and students; striving to become a *learning organisation*.
responsive – embraced a flexible structure and adapted to local and cultural settings; developed learner capabilities that helped recognise complexity as well as the changing nature of sustainability challenges and rejected a one size fits all approach to sustainability.
reformative – appreciated that the agenda is not simply one of adding on environmental or SDG themes to the curriculum but that of reframing the entire educational experience. "[13]

It is clear that a wealth of theoretical understanding and studies that promote and support a WSA to sustainability-oriented education does exist. However, as a WSA becomes

part of a mainstream agenda, there is a pressing need for examples of WSA in practice to be collated and shared to allow for joint learning. One conceptualisation of a WSA currently in use in countries like the Netherlands and Norway is the WSA flower model. This model consists of six interrelating elements (Figure 1) that together constitute a WSA.

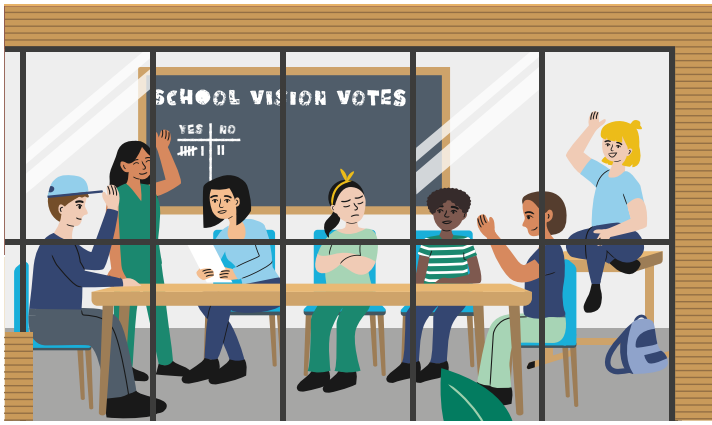
Different variations of this model can be found, both in international education policy initiatives connected to SDG 4 (e.g. Ed.Scotland[14], 2020; UNESCO, 2017[15]; COE, 2018[16]; UNGEI, 2018[17]), and connected research (e.g. Chopin et al, 2018[18]; Mogren et al., 2019[19]; Rowe et al., 201[20]; Scott, 2005[21]; Shallcross et al., 2006[22], 2008[23]; Mathar, 2015[24] & 2016[25]; Hunt & King 2015[26]; Bosevska & Kriewaldt, 2020[27]). However, they all highlight the multifaceted aspects of anchoring holistic, systemic and sustainable perspectives meaningfully in education, and emphasise that the whole is more than the sum of all the parts.

The WSA model is meant to be used as a thinking tool to initiate and guide an on-going multi-stakeholder dialogue about how sustainability can best unfold in a school setting (See also references mentioned above). Each of the components of the flower will be briefly described[a].

Figure 1: The Whole School Approach Flower Model with its 6 key components (adapted from Wals and Mathie, 2022[28])

a: This short WSA description has been modified from Wals and Mathie, 2022.

Vision, Ethos, Leadership & Coordination • All stakeholders in a school are involved in developing a vision of what a sustainable school entails and invites. School leadership enables such participation and provides for some coordination as changing an entire system can be complex and messy. The school culture and ethos align with the vision, as consistency between thinking and doing is essential. Typically, a school ethos that aligns well with notions of sustainability is one that is caring, nurturing, inclusive, open, peaceful, and reflexive. Asking questions, including uncomfortable ones is encouraged, to foster a willingness to re-think and re-calibrate the school considering new insights and a changing world.



Curriculum • Schools have a say in the curriculum and can connect with key emerging sustainability topics from disciplinary (the regular subjects) and interdisciplinary vantage points. Ideally there is space and freedom to create a more localised, place-based and co-created 'parallel curriculum' that allows for engagement in and responding to cross-cutting interdisciplinary challenges such as climate urgency. Subject teachers do not dismiss their disciplinary focus, yet still engage in a 'whole subject approach' that allows for making links with SD-topics and the inclusion of perspectives from other disciplines. A curriculum that allows for alternative forms of pedagogy and learning to be experimented with is essential.

Pedagogy & Learning • The pedagogies and types of learning that are most suitable for realising this are not of a transmissive and singularly cognitive kind, but of a transformative kind affecting mind, body, heart, and soul. Typically, such pedagogies and learning processes are place-based, experiential, inquiry-based, transgressive, and critical, as well as socio-emotional with attention to moral issues, ethics, and values. In a WSA the pedagogical environment a teacher and the school create tends to be one of trust, curiosity, collaboration, participation, and democracy. Much of the learning does not take place inside the classroom but also in other spaces in the school building, as well as on the school grounds and in the local community, e.g., in outdoor classrooms, repair cafés, etc.

Institutional Practices • 'Walking the talk' and aligning what we find important and believing in what we do, is critical in creating a culture of sustainability (Shallcross et al., 2006). What a school does, what behaviour it invites, or makes difficult, all reflect a school's intentions and ethos. For example, energy and water usage, the kind of food and nutrition that is offered or nudged, how biodiverse the school ground is, what forms of transport students and staff use, but also how people deal with conflict, diversity and inequality. Educational investigative explorations focusing on sustainability issues in and around the school itself provide rich educational opportunities that connect with curriculum, pedagogy, and learning, while at the same time establishing healthy school-community relationships. By interrogating, rethinking, and redesigning institutional practices the 'hidden curriculum of unsustainability' that is often present, can also be exposed and addressed.

Community-Connections • A school can be seen as a microcosm of the wider world nested in a community filled with resources for teaching and learning. To create a healthy habitat that invites and supports sustainability, a school will need to be both inward and outward looking, to be open and connected to the people and place/land it occupies, and the other species that live there. Establishing good relations with parents, residents, businesses (local farmers, bike [repair]shops, restaurants, etc.), community and cultural hubs (libraries and museums etc.), informal learning spaces and other education institutions, NGO's, special interest and advocacy groups, as well as with local government, is critical. The idea is that synergies and mutual learning can occur when students explore issues that are relevant, not only to themselves but also to others, whereby community partners can offer insights but can also benefit from students' attention, cooperative research and creativity. By using the local community as a living lab or an outdoor classroom, students also can become more rooted in their own habitat and gain a sense of place and connectedness.

Capacity Building • A transition in education towards more integrated, existential, and relational forms of teaching and learning also implies that all those working in schools, not only teachers, but also those cleaning the building, running the school canteen, the people maintaining the buildings and the schoolgrounds, etc., will need to have the competences needed to support such learning and contribute to the ethos a school aspires to realise. Depending on the kind of work staff members do, there will be differences in what these competences entail. Professional development of teachers remains critical as they will need to be able to work with a more open curriculum, broker relationships within the school and with outside partners in the community, and work with a range of disciplinary vantage points alongside their own. Teachers and examiners also will need to become comfortable with alternative forms of assessment that pay attention to socio-emotional and embodied forms of learning.

Another area, not covered by the model, is the policy environment in which a school is nested. Such an environment can be supportive or constraining. In the synthesis section (Section III) some characteristics of policy environments and policies that are conducive to a WSA will be provided.

In the next section the various elements, relationships and synergies, but also tensions and challenges that arise when enacting a WSA to sustainability, will be sketched out. Critical WSA-in-action examples are featured that emphasise both common and different entry points, and aspects, of a WSA to sustainability-oriented education.

II Critical Exemplary WSA Case Studies from around the world

Central in this report are the critical exemplary case studies from schools around the world that offer practical examples of a WSA to SD in action. The critical refers to 'also revealing barriers, set-backs, struggles' and sketching potential ways out of them. Through an international call for such examples – via international networks like, Eco-Schools, UNESCO and UNECE, as well as social media (LinkedIn, Twitter and Blogs), potential cases were received which were then screened for suitability. The selection criteria focus was to identify a broad selection (both geographically and school types) of primary, secondary, or upper secondary schools (including vocational ones) that provided practical examples of how a WSA is being utilised in practice. Any type of primary or secondary school was considered if they provided current and practical examples of holistic and integrated approach to sustainability-oriented education and were willing to be critically reflective. The contributions come from standalone schools that made contact directly, or schools that are part of larger relevant sustainable-oriented education collaborations or partnerships - for example, a teacher education department, an NGO, or wider educational innovation projects. The overarching aim was to be inclusive in the selection to ensure a broad range of entry points and school types were included. From compiling this 'quick scan' WSA report, it is clear the interest and commitment to a WSA is far and wide. However in some situations where the motivation and knowledge exists, the structural support and competencies to support schools is missing to enable schools to move beyond 'bolt on' or 'built in'[29] approach to SD. Take for example in Türkiye, the experience from one dedicated primary school teacher Çelebi Kalkan's (also Scientix Ambassador[30]) experience (on page 10).

Another contribution submitted for this report highlights the need for flexibility and openness in the way a WSA is utilised and engaged with. In Uruguay, researcher Diego Posada documented the enablers and barriers for one school on its journey towards sustainability. While this inspiring school is not included as a main critical case-study due to constraints,[a] it is clear this school can offer inspiration as to how a school building that lives and breathes sustainability, motivated staff, and full of low-tech sustainability and closed loop systems, can be an integral entry point for a WSA. Diego Posada, currently a PhD student at The University of Padova in Italy, provides a few insights (on page 11).

In the end, 17 cases from 16 countries were selected for further development in close connection with the case -study contributors. The cases come from: Japan, The Netherlands, Norway, Canada, South Africa, India, Hongkong, Finland, Mongolia, Cyprus, England, Northern Ireland, Nepal, Türkiye, Kazakhstan, and the USA. However, due to limitations (space and time), only 10 of the cases are published in this report printed edition, whereas the online edition houses all the contributions.

The 10 cases selected for this publication offer examples of a **WSA principles** in action from a diverse collection of schools, both in their geographical location, school type, and pedagogical approach. All highlight how multiple aspects of a WSA (*curriculum development, pedagogical innovation, school management and leadership, school-community relationships, professional development of staff, and the school as a 'living laboratory' for experimenting with healthy, equitable, democratic, and ecologically sustainable living*) can be engaged with, especially how these aspects can be integrated to mutually strengthen each other.

The cases are presented in a random order using a fixed structure of: 1). Title 2). The national ESD context in which a case is nested 3). Introduction to the case and its local context 4). Highlights and examples of key WSA principles in action at the school. 5). A box with the identified strengths and challenges of the case. As much as possible the cases are illustrated with photos, figures and/or illustrations to capture the richness of the examples. All cases contain references listed in the report endnotes.

The following additional critical case studies, accessed online via www.wur.nl/wholeschoolapproach are as follows:

- **Mongolia:** A nation's response to mainstreaming ESD practices utilising a WSA. WSA and Government led pilot study leading the way for sustainability in Mongolia.
- **Norway:** A university-school partnership on ESD in practice. This case provides an example of how long-term multistakeholder partnerships can be established and support a WSA to be utilised as a thinking tool for educational innovation on multiple levels. The schools offer examples of how developments of WSA-practices

a: It was not possible to contact the school management directly, which was a requirement for this report.

are being impacted by both research and practice from different institutions.

- **Nepal:** Rupantaran whole school community research and development partnership. A Participatory collaboration between schools and universities, unique in its focus on 'quality education' (SDG4), innovative teaching and community social enterprises.
- **Canada:** Belfountain 'Learning for a Sustainable Future School'. A primary schools 15-year journey exemplifies how a small group of committed teachers can grow their efforts into a whole-school approach.
- **Türkiye:** A Green Flag Eco-School's Journey towards ESD Practices. A primary and secondary schools experiences from a decade of being an Eco-School - environmental education and sustainable development goals becoming part of the school culture step by step.
- **Kazakhstan:** A Whole School commitment to sustainability - embracing the SDG's through stories.
- **Northern Ireland:** School community partnerships in action. A whole school and whole community commitment to sustainability through the Eco-School Eco-code model.
- **South Africa:** Longstanding Eco-School members. Additional case study school - Amanzimtoti primary school celebrates a diamond decade of being an Eco-School.
- **India:** 'Quality Education' as an enabler for the SDG's. Additional case study school - Dehli Public School share their whole school commitment to the SDG's.

***Türkiye** • Çelebi Kalkan, primary school teacher, Scientix Ambassador - Hasan Polatkan Primary School*

While the Turkish national curriculum supports an integrated approach to sustainability-oriented education through the primary school life science, science and social studies courses, in my school it is difficult to move beyond a 'Whole Classroom Approach'. This is because I am often doing this alone because not enough teachers have ESD related competencies. However, in my experience a strong entry point for utilising a WSA has been introducing ESD related pedagogy and learning processes, such as the inquiry-based learning studies Science, technology, engineering, and mathematics (STEM) education provides. STEM education in the 21st century aims to develop and present innovative solutions to global issues that are directly related to the 2030 Sustainable Development Goals. In our school this has also led to awareness activities happening connected to the issues related to the sustainable development goals (Protect Your Food -SDG 2, Zero Waste - SDG12 and Breathe into the Future - SDG13), for example, planting trees, cleaning the environment with students. However, the other WSA components are only partially embraced.

As a contribution to build capacity in Türkiye, *Dr. Sümeyra Ayik and I have written* a SDG Activity book[31] based on pedagogical techniques that engage students in learning about the SDGs through play and having fun. It is designed to be relevant for all learners of all ages worldwide, and it aims to support policymakers, curriculum developers, and educators in designing strategies for ESD. As is the case all over the world, national policy and funding needs to be made available to support capacity building, otherwise the pedagogical inadequacy of teachers will continue to remain the biggest barrier. Human skills cannot be developed without quality education. It is not possible to achieve sustainable development goals without gaining human skill.

Students SDG activities on global food waste awareness day

***Uruguay** • Researcher Diego Posada: Public School No. 294 - Escuela Sustentable*

Escuela Sustentable, otherwise known as the Sustainable School is situated in Jaureguiberry, a small coastal town 70 km East of Montevideo. It is a primary rural school located in a lower-middle socioeconomic background that works with around 80 students. The educational team consists of two teachers, one pre-school educator and a Headteacher. They are also supported by a Vegetable Garden Expert and volunteers from Tagma, the NGO that built the school in 2016. The school was built applying biotecture techniques and 60% of the materials used were recycled items such as tyres, glass, plastic bottles, etc. Water is collected for human use and vegetable garden irrigation and the energy grid relies on solar panels. The school has received international awards for being the first sustainable and self-sufficient public school in Latin America. Furthermore, the school has received significant media and public attention over the past years and is the first of a growing network of schools of similar characteristics built by NGO Tagma[32] in Latin America in Argentina, Chile and Colombia. Based on my observations, support by the community and authorities are key. If either of these faulter, as it has been observed in this case, every step is a struggle. Moreover, school leaders must be willing to embark into the unknown and learn in the process along with students. One of my interviewees claimed that the youth are pushing the older generations to take these steps, it's a matter of walking side by side and discover how to adapt our old ways into these new pedagogical perspectives.

Strengths • 1. The school building, which follows biotecture techniques such as rainwater collection and irrigation, solar energy grid, passive heating and cooling, etc. **2.** Experienced and flexible staff: two professionals have embraced the project since its inception and worked hard to draft an institutional project that promotes sustainability as its main aim. **3.** Support by external actors such as the NGO that built the school and a "vegetable garden expert." **4.** The location: The school is located in a small beach town, which invites students to work outside and connect to nature.

Challenges • 1. Lack of community engagement: Most parents wanted a "traditional" public school and not an alternative one. This is something the professional team struggles with 6 years on. **2.** Uneven commitment by members of the educational team: Due to national educational policies, teachers rotate and therefore there has been an unstable team. Moreover, those teachers assigned to the school do not necessarily believe in its ethos or sustainability approach. **3.** Lack of support by national educational authorities to face the unique challenges this school faces. **4.** Standardised curriculum: since it's a public school, it has to follow the national curriculum. However, there are no standardised tests in Uruguay, which allows for significant pedagogical freedom for teachers.

The school building and grounds of Public School No. 294, Uruguay

Japan • A 'Whole Community Service' Learning Approach to ESD

Special thanks to Hiroko Shibakawa and Jun Takagi for this contribution

One of the practices in Japan that led to them proposing to have the UN Decade of ESD (UN-DESD), at the UN Summit in 2002, was the citizen-led environmental education project in Okayama. This project was conducted through close cooperation between schools, service learning and adult education organisations, and local communities. In the beginning of UN-DESD, Okayama City launched the citizen-led "Okayama ESD Project" and the city was one of the first seven cities in the world to receive RCE certification from the United Nations University. In Japan, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) has been promoting UNESCO Associated Schools (ASPnet) as regional centres for ESD. Since that time they have been aiming to increase the number of member schools. In 2014, the final year of the conference, the number of member schools had increased from 16 to nearly 1,200 - the largest number of member schools per country in the world. In the Okayama area, the Okayama City Board of Education, in cooperation with the ESD Collaboration Promotion Centre at the Faculty of Education, Okayama University, has started to support public primary and secondary schools to become members of the UN-DESD, and 51 of the city 163 public schools have been accredited, the highest membership rate in Japan.

School Overview and Features • The driving force behind this collaboration (The Okayama UNESCO School Network) is Okayama Prefectural Yakage upper-secondary school, located in the town of Yakage (population 14000), situated in a mountainous and nature-rich area. The school received the first UNESCO School/ESD Grand Prize in 2006 and in 2008 it was the first school in the prefecture to be accredited as a UNESCO ASPnet school[a,33].

School-based subject "Environment" • Since 1995, a Physical Education teacher, Jun Takayuki Muro had been practicing various hands-on activities with his students, such as environmental conservation activities in local rivers, firefly farming, and hands-on activity camps on remote islands. He then encountered the concept of ESD, focused on its potential, and went through trial and error with the help of university experts. This led to the creation of a new subject called "Environment" in 2004, which was a rare attempt in Japan to set up a school-unique subject. Although it was the first course without a textbook, the school began to position this subject as a new and distinctive education. In 2008, a living and learning biotope, similar to what nowadays is referred to as a green school-garden, was created in the school's courtyard.

"Yakage Studies", a school subject • In 2010, a new element was added: "Yakage Studies". This is a Comprehensive Service-Learning Course designed to help students grow and realise their career goals by using the relationships with the local community that they have cultivated through their "Environment" courses to execute and experience actual activities that serve the well-being and sustainability of the community. Every Thursday afternoon, students ride their bicycles to various local places, such as kindergartens and nursery schools, primary and secondary schools, libraries, welfare facilities, farms, and businesses to provide a service. As a result, the students' sense of purpose changed to a clear one of creating a sustainable society, and this also clarified the educational goals of the school.

Establishment of the Okayama UNESCO Secondary School Network • In 2012, it was decided that secondary school students from UNESCO schools in Japan would take the lead in planning and organising a forum for high school students at the UN-DESD World Conference[34] to be held in Okayama City, where they would discuss the creation of a sustainable future with young people from across the world. UNESCO schools in Okayama Prefecture[35], including Yakage High School[36], held a series of study sessions in the prefecture, and the event was held. Students were the main organisers of the conference, but were supported by university students, mainly graduates of UNESCO secondary schools. In the time leading up to the UN-DESD World Conference, Jun Takagi, who contributed to the writing of this case study, became the teacher in charge of ESD at Yakage High School as a successor to Mr. Muro, the physical education teacher who initiated the project originally. Jun Takagi deepened his understanding of

a: The UNESCO Associated Schools Network (ASPnet) links educational institutions across the world around a common goal: to build the defences of peace in the minds of children and young people. The over 11,500 ASPnet member schools in 182 countries work in support of international understanding, peace, intercultural dialogue, sustainable development and quality education in practice." ASPnet, (2022)

Key WSA Principles in action at *Yakage upper-secondary school*

Capacity building • Community Connections • Curriculum

- These three WSA principles are the schools strongest WSA interlocking strands. However, it is not collaboration for the sake of collaboration, but something that can be done by the members of the group at the time as they face the issues that need to be addressed - The creation of a system that allows both teachers and students to tackle these issues boldly and happily has resulted in professional growth and regional collaboration
- In the current regular meetings of the ESD Section, each member talks about the growth of students that they have witnessed in ESD classes and events, and this has a positive effect on the team and the school as a whole
- Weekly meetings where the team of teachers in charge of the "ESD Basics" class develop the annual plan and share the progress are also a creative learning opportunity for the teachers

Vision, Ethos, Leadership & Coordination

- The school's mission of nurturing the shapers of a sustainable society is shared and has already become part of the school's culture
- ESD is well positioned in the school's educational goals and philosophy and sends a clear message as a pillar of the school

Pedagogy & Learning

- The ESD class "Yakage Studies," is recognised as one of the most unique classes in Japan in that it is based on students' independent activities in the local community
- Learning at the school covers a wide range of fields in order to solve sustainability issues in the local community

Institutional Practices

- The school has a biotope called Eco Square, which is a project of Okayama Prefecture and was planned and proposed by the students themselves from the viewpoint of universal design
- Blocks containing wood chips from thinning, recycled glass, and paving materials made from rubber chips from waste tires are used to deepen students' awareness of the need to create a recycling-oriented society
- An outdoor classroom area called FOREST, planned and proposed by the students. It is made of wood from Okayama Prefecture and is used in various ways like a meeting room for the UNESCO School

ESD and came to realise that the issues of sustainable development are connected to the issues of declining birth-rates, aging society, and depopulation in the mountainous region where the school is located. The students learned that the challenges of sustainable development are also connected to the challenges of declining birth-rates, aging society, and depopulation in the mountainous region where the school is located, and that addressing the challenges of local communities can lead to solving global sustainability issues. Jun Takagi proposed to create an international network of UNESCO Schools facing similar sustainability challenges to learn from each other.

Whole School Approach of Yakage Upper-Secondary School • Entry points for ESD at various levels: Classes, events, and extracurricular activities. At Yakage upper-secondary school, there are various fields of activities: Biodiversity, disaster mitigation/disaster prevention, environment, cultural diversity, world heritage, intangible cultural heritage and local cultural assets, international understanding, welfare, sustainable production and consumption, and health. The three pillars of these activities are "community cooperation," "environmental study," and "international exchange," and in line with these pillars, (1) classes, (2) events, and (3) extracurricular activities are systematically incorporated and developed. In the first year, students take a class entitled "ESD Basics", and in the second year, they are divided into three courses: General Course, Exploratory Course, and Regional Business Course. In the General Course of the Regular Course, students experience "Yakage Studies," in which they practice at local facilities to create a sustainable local society. In the Exploratory Course, students enter a "student contest" to solve social problems. In the Regional Business Course, students work with the local shopping district to develop healthier and more sustainable products and services. In all courses and departments, cooperation with the local community is essential. Unlike urban areas, local communities are facing a variety of problems, including depopulation, declining birth-rates and aging populations, difficulties in sustaining various cultures and industries due to the outflow of young people, a decrease in number of farmers, abandonment of farmland, and issues related to the revitalisation of shopping districts.

Collaboration with the local community • At present, the whole town of Yakage is supporting the activities of Yakage upper-secondary school, and the town's PR magazine has a section introducing the school's activities in the community. Still, it is not so easy for any school to cooperate with the local community. One of the reasons why this kind of cooperation became possible was that teachers visited various facilities in the town when starting "Yakage Studies", so that they could share their philosophy firmly and gain understanding. It is of great importance that the students understand that the program is not simply an activity to

gain experience or to supplement the labour shortage at the facilities. Rather collaboration to support the growth of the students throughout the town and to form a sustainable society, which will benefit not only the students but also the school and the local community. Naturally, students will sometimes make "mistakes," and it is these moments that will inspire growth and learning. Therefore, Jun Takagi clearly states in his explanation of Yakage Studies that students should expect to make mistakes in advance.

In Japan, many "comprehensive learning" programs do not allow room for failure, but rather lead the students to study the region as planned and to achieve the same results as in previous years, which results in superficial experiences without deepening learning. On the contrary, at Yakage upper-secondary school, it is noteworthy that the school considers that "learning does not proceed as planned" and that "it is not necessary to achieve the same results as in previous years".

Integration of formal, non-formal and informal education • ESD events are also linked to ESD classes. For example, the YAKO Presentation Week is a fun event in which students share their learning on stage, and not only do second-year students report to first-year students on their activities in the above-mentioned Student Contest, Yakage Studies, and Product Development, but first-year students also share with second-year students what they have been working on in ESD Basics. At the YAKO Awards, groups of students will present their ESD activities to each other, and the evaluation will be done by the students themselves. The presentations are open to the local community.

Strengths/Prospects

- The local community fully supports the school's ESD
- ESD regional coordinator is properly assigned
- The ESD Division has been established, which includes the school's public relations staff and those in charge of the primary and secondary school cooperation. This is very important so that the school does not have to take on everything

Challenges

- Schools in depopulated or rural areas are rich in nature and have strong human ties, but they face different sustainability issues from those in urban areas, such as a declining population and a serious shortage of successors in agriculture, even though they have a self-sufficient and sustainable economy
- Sometimes difficult to continue such efforts in public schools where there is a rapid turnover of teachers. It is urgent and a challenge not only to consider staffing by dividing the entry points to ESD and community learning for teachers into different levels, but also to create a foundation for developing the activities that have been carried out so far with an eye to after the next team that establishes the ESD Section moves on

Yakage upper-secondary school Eco Park and Biotope

Yakage Gaku Service Learning at a local farm

In addition, students take a field trip during the summer vacation to visit an ESD-developed area, which is related to all the classes mentioned above.

Pluralistic ways to participate in ESD activities • Furthermore, ESD extracurricular activities provide a variety of entry points, including participation as volunteers in local community festivals. The following are some of those that have been implemented with ingenuity in the Corona disaster.

1. Japanese language classes for Vietnamese trainees living in the town
2. Yakage Children's English Day
3. Science Club's "Outdoor Experiment Class" for parents and children visiting the Sunday Market
4. Development and dissemination of SDGs card game
5. Interviewing and transcribing "experts" in various fields in the local community, and preserving their records
6. Meeting of primary and lower and upper-secondary school students, and local residents who suffered from the heavy rain disaster to talk about their feelings
7. Creation of a disaster prevention backgammon

In addition to the fixed annual projects with local partners, the school meets new groups and organisations every year and engages in a variety of small-scale activities, which has led to the emergence of new activities. This not only prevents the activities from getting stuck, but also provides a variety of entry points for students to become involved in ESD. For upper-secondary school students who are in the process of deciding their future career paths, challenging themselves to various types of activities can help them see what is truly important to them and discover new strengths that they were not aware of before.

Capacity Building of Teachers • Structure and Team Formation to Support Teachers' Community Debut. From the point of view of the continuous professional growth of teachers, it is important to consider who oversees classes, events, and extracurricular activities, and how these are organised into activities from the stage of "getting used to the community," to the stage of "worrying about the community," and then to the stage of "challenging the community". In Japanese public schools, teachers are transferred every few years. Newly appointed teachers may have no connection to the Yakage area. Not all teachers understand or are good at working with students in the community and solving problems for a sustainable society. If such teachers are suddenly put in charge of classes and activities at the level of "taking on the community," they may not only fail to continue their existing activities but may also fail to work well with the community. This is a serious problem because the ESD practice that has been accumulated and matured will be discontinued when the teacher changes. Therefore, it is necessary to start from the level of "getting used to the community" and explore the field in ways that are suitable for the individual. Like the students, some of them come to move onto the stage of "worrying about the community" or even to "want to challenge the community".

The most important point is to set up a Division of ESD, form a team of teachers, and have a meeting once a week. The Division of ESD consists of five teachers including Jun Takagi, the division chief, and one regional coordinator. Each teacher is in charge of "Public Relations", "Volunteering", "Planning", "Yakage Studies", "UNESCO School", and "Primary and Secondary School Collaboration". This has a significant effect on the promotion of ESD. In other words, having a person in charge of the pillars of school education in the Division of ESD makes it possible to incorporate ESD perspectives and principles into all activities. The person in charge of public relations, who disseminates the school's activities to the community, learns from Yakage Studies and UNESCO School staff about the skills that students have developed through ESD activities in the meeting. Afterwards, s/he disseminates this information through newspapers, government magazines, and the school's website. This is where the " Primary and

Secondary school collaboration," which is responsible for cooperation between all the schools can be linked. When local school students learn about the ESD activities of Yakage upper-secondary school. They then enter the school with similar aspirations, it is beneficial for both the town, which wants to reduce the outflow of young people to urban areas, and the upper-secondary school, which is in danger of reducing its capacity. This is a mechanism for the local community to fully understand what effect the ESD activities of Yakage upper-secondary school are having. It is also a mechanism for fostering a culture rooted in sustainability in the local community.

Assignment of regional coordinators • Yakage Kids Group (YKG) was founded in 2015 by Mr. Muro and local parents and is an organisation for all primary and secondary school students to develop activities to improve the community in the town of Yakage. Its representative serves as the regional coordinator for Yakage upper-secondary school. Jun Takagi has been introducing students to the coordinator, who have an idea of what they would like to try but are unlikely to be able to realise it in the school education system with its various restrictions. As these students have achieved results, the school has gained trust in YKG, and this has led to the securing of a proper budget and the inclusion of YKG as a coordinator within the school. By being involved inside the school, the regional coordinator has been able to better understand the work of the teachers. It is considered important for informal education (YKG) and formal education to work together in just the right degree. It is a unique job for teachers to identify students' potential and growth buds, and providing them with support, rather than sending them out completely irresponsibly. Although there are some activities that can be done because they are away from formal education, it is believed that greater results will be produced if both the community and the school support students' community experiences so that they can feed their own learning. In other words, the school's Division[b] of ESD believes that students should be able to experience the local community. Having a division just for ESD is unique for Japanese high schools and is making a huge difference. Accordingly, the Division of ESD plays the role of "a behind-the-scenes producer" who creates a learning environment so that students can experience authentic learning rooted sustainability.

b: Generally, in Japanese high schools, several divisions are common –Academic Affairs Division General Affairs Division, Career Guidance Division, Student Guidance Division. Teachers are generally assigned to any of these four. As Yakage HS's unique point is that they established ESD Division, assigned the dedicated teacher (Jun Takagi) as its chief, and four other teachers, who also belong to other sections, and one regional coordinator.

Yakage Gaku Service Learning in a local canteen

The Netherlands • Green Vocational Schools committed to a WSA

Special thanks to Sandra Menkhorst and Vivian Siebering for this contribution

In the Netherlands the development of ESD in primary and secondary education was initially informed by Environmental Education (EE). In the Dutch language this is referred to as *Natuur-en-Milieueducatie*, or Nature- and Environmental Education[37]. Whereas EE was well understood in educational practices, ESD was not. EE-organisations played a big role in developing lesson plans, curricula, modules, projects, etc. covering SD-related topics to be added on or infused into the regular curriculum. At policy-level and through national education institutes, such as the National Institute for Curriculum Development (SLO), attempts were made to influence the official learning objectives and graduation requirements to incorporate SD-related issues.

During those early years of ESD-development, schools also started paying attention to reducing their own ecological footprint. In recent years, for reasons varying from increased societal concern around climate change, health and well-being, to the desire to make education more relevant and responsive in light of the rapidly changing and confusing world, schools have started to see SD and the SDGs as a trigger to rethink schooling, teaching and learning altogether. Interdisciplinarity, boundary crossing between school and community, action-oriented issue-based learning, student participation and voice, have all been identified as important. Sometimes supported by NGO's, like SME-Advies[38], the coordinators of the Dutch Eco-School program, or network organisations like 'Leren voor Morgen'[39], schools have begun developing what might be considered a WSA to, basically, good education.

This example is from Zone College, a collection of eight Green Vocational Schools, formerly known as agricultural schools, situated in the east of the Netherlands: Zwolle, Twello, Enschede, Hardenberg, Borculo, Deventer, Almelo and Doetinchem. They provide green education for lower-secondary vocational education, upper-secondary vocational education, and adult vocational education. Vocational schools seem to have an edge in this transition since they have always used embodied, applied and interdisciplinary forms of active learning, and have a tradition of working with the local place/land and local stakeholders. Zone College's sustainability profile is also supported and enhance by their participation in the Eco-School scheme and works closely with the Eco-School framework which has 7 key steps.

Established by the Foundation for Environmental Education (FEE) in 1992, the Eco-Schools programme represents the largest international network of students and teachers. The programme has been implemented, albeit in various shades of green, in 59,000 schools in more than 72 countries[40].

Eco-Schools seven steps[41]

Eco-Schools' seven step plan (above) helps the Eco-team getting started. Step 2, 3 and 4 form a cycle of measuring, planning and evaluating, which the Eco-team runs by annually. Students execute an environmental review within the school and carry out actions to make the education, the building and the community in and around the school more sustainable[42].

An important aspect of being an Eco-School is bringing in students' voices in deciding what to learn and what to do. The student-led Eco-Team that coordinates and initiates sustainability initiatives in and around the school, is a key tool in realising this. Students who want to join this team need to formally apply and provide a sound motivation why they want to be actively involved. At Zone College Twello, students have a high level of autonomy and learn from each other as student teams organise activities for their peers. The Eco-Team has its own Instagram account and YouTube channel for sharing the schools' sustainability efforts with the outside world.

The image, from Zone College's campus in Twello, is an example from one years (2019) Eco-Code development. An Eco-Code is the Eco-Team's mission statement demonstrating – in a positive, clear and imaginative way – the school's commitment to improving its environmental performance. The Eco-Code can be anything you want - a song, statement, poem, rap, acronym or something even more creative. A recent Eco-Code focused on problematising and combating plastic soup by creating an imaginative work of art. The artwork shows how we are surrounded by plastic, and that there are no more plastic-free places. Students investigate ways to reduce the use of plastics in the school and in their home environment, engage in community clean-ups and engage in awareness raising activities. Through this Eco-Code a link is made between the local and the global.

"Sustainability is really in the DNA of the school, both in the building, the teachers, the lessons and the environment"

Hak van Nispen

"Increasing attention is being paid to healthy living, safe food, sustainability, nature and a green living environment. This requires well-trained people and new knowledge. As an educational organisation we contribute to a healthy, green future for people and the world. In doing so, we constantly seek coordination between the needs on the labour market and those of our students. With care and attention, we offer our pupils, students and employees a green, challenging learning environment in which they discover new possibilities. And in which they develop with head, heart and hands. On your own and especially together. In this way they grow into self-conscious, caring, enterprising and socially involved people. Global citizens with an eye for sustainability and quality of life"[43].

The following contribution is by Vivian Siebering, Sustainability coordinator at Zone College, and Sandra Menkhorst, educational advisor of the secondary school (age 12-16) campus in Doetinchem:

Zone College Doetinchem, is located in a semi-rural public green vocational secondary school consisting of just over 1000 students between the ages of 12 and 17 years. Students are mostly native Dutch with a non-immigrant background and tend to have an agricultural or rural background. In 2017, Zone college also started the work to become an ECO-school through the Eco-Schools programme. At Doetinchem campus, along with all the other Zone College Secondary Scools, developed its own Green Profile curriculum which has two key components. During the first two years, students participate in 'Green World Orientation' which is a practice-oriented course focusing on cross-cutting green vocational themes: Animals, nutrition, landscaping and creative vocations. In the final two years the students can combine one of these themes of their own choosing with a sphere or world in which they want to explore the theme in more depth. These worlds are: The living world, the active world, the healthy world, the creative world, and the green technology world. Working with these four domains and four different worlds throughout the entire four-year program assure that students are actively engaged in hands-on sustainability-related issues every school week. Still, there the curriculum greening could go deeper when playing by the rules of the Natural Step (https://thenaturalstep.org/) which inspire staff at Zone College. One area of improvement is the purchasing of the materials students use for their creative design and construction work. Often these materials are

Zone College Secondary school Eco Code

bought at a local discount store without paying much attention to the ecological and social footprints of the materials. Another example comes from the animal domain where students learn about the wellbeing of domesticated rabbits and their natural behaviour. However, the way the rabbits are housed at school does not necessarily reflect what is taught. Often teachers want to do better but need time to investigate and resources to act accordingly. Both are often lacking. Another area of struggle or contention is how to navigate the tension between what society is increasingly demanding from farmers in terms of sustainability and animal well-being, and the way the parents of the students – many students grow up on a farm - manage the farm which does not always correspond. Teachers are confronted with these tensions and emotions that the intense discussion might evoke and dealing with them in the classroom is a challenge. On the other hand, the school does also try to walk the talk, for instance in the energy domain by creating a climate neutral building with the support of Eco-Schools.

Another curriculum link is the major project weeks focussing on interdisciplinary sustainability topics. In 2021-2022 the school created the project *Make Earth Cool Again* (MECA). During the MECA week, the majority of theoretical and practical lessons for the first-years students at of Doetinchem focus on sustainability. Teachers take the lead, and form working groups that consist of an educational developer and students, and together they design the program and its activities. As a result, they themselves learn a lot about the different meanings, complexities and ambiguities that characterise sustainability issues, and

Key WSA Principles in action at ***Doetinchem secondary school***

Vision, Ethos, Leadership & Coordination

- The vision of our school is clear, visible in school and known by teachers. Sustainability is part of it
- Zone college has 8 locations in a large area. Since a year, there is a sustainability coordinator who is developing now a vision and strategic goals for sustainability for the whole organisation of Zone college

Curriculum

- We believe that sustainability is in the heart of our curriculum, but we want to improve it and develop circularity in our school through our curriculum. For example, by using the coffee grounds to grow oyster mushrooms, using the harvest of our kitchen gardens in the cooking lessons, selling the things we make, in other words: giving things another life by closing cycles

Pedagogy & Learning

- Tailor-made hours (Maatwerkuren) and moments of interest (Interessemomenten) - give our students the opportunity to choose what they are interested in
- Our MECA week is a good example, but we want to develop more of this kind
- Head, heart & hands philosophy

Institutional Practices

- We try to connect all technical installations to the curriculum and involve teachers to work with them
- The design of the building invites sustainability

Capacity building

- There is no separate programme, but the staff learns a lot by doing: by speaking with the companies that install the technical installations for example, by speaking with the sustainability coordinator, there are stimulated reading books and learn a lot by preparing projects like the *Make Earth Cool Again* week

Community Connections

- Business collaborations with small- and medium enterprises traditionally already exist in green agricultural schools

As part of MECA week students at Zone college learn about how sustainable jeans are, including the raw material life cycle

about ways to make these accessible to the students in a meaningful way. Critical here are the workshop that involve local businesses and NGOs and the guided tours for the parents of the students. The activities were interesting for students because they connected with their everyday lives. For instance, the challenge of 'beating the micro-beat', which made students aware of micro-plastics in toothpaste and cosmetics, challenges them to come up with healthier and more sustainable alternatives. Another important aspect of the project weeks is the visual documentation of the process and the outcomes using filmmaking. The resulting documentaries can be integrated in the curriculum for the next generation of first-year students. The working groups which did the preparation of the MECA week are an example of peer-to-peering learning, the students 'taught each other' while developing the week, with some input from the sustainability coordinator. As part of MECA, local companies came to give free workshops because the social purpose is important for them, and they genuinely want to contribute to the education of their new future employees.

The sustainable aspects of the school building and school grounds become sources for teaching and learning, while the teaching and learning provides input for making the building more sustainable. After participating in practical lessons and the MECA-week students create and maintain their own gardens for example. Through the new glasshouse that has been designed to be able to treat the school's sewage and wastewater by a filtering system that preserves the nutrients as input for growing vegetables, students come to understand cycles and circularity. Lastly, the building itself – which was quite expensive – is a building that teaches in and by itself as it invites a green spirit and more sustainable behaviour.

Some reflections • The agricultural background of our students is a struggle sometimes. Students (and also teachers) that grew up in the countryside, often associate sustainability with the measurements of our government to reduce the livestock. That can have a tremendous impact on their parents' business and creates a lot of stress for many people they know. We have learnt that it is important to give space to these emotions. It is important to acknowledge this, before you can go on to work on sustainability at school.

We want to increase the amount of activating didactics in our lessons and increase the coaching skills of our teachers so they can help students in making their choices. We also want to organise more activities where classes are mixed. Our MECA week is a good example, but we want to develop more of this kind.

The working groups of teachers work very well. They develop themselves and spread information to their team.

Strengths/Prospects

- The ECO-School scheme and the support provided through SME-Advies provide concrete steps and support for developing a WSA
- The role of the educational advisor to develop new projects and connect the ideas of the different working groups of teachers. Teachers alone don't have the time to work out things like the MECA project week
- The focus on circularity, closing cycles, and creating a local 'micro economy' that generates funding for future sustainability efforts
- Vocational and place-based aspect of the college means a fits well with a WSA due the pre-existing values and environmental focus of the college
- The organisation of special curriculum activities – like the sustainability project week – that include all teachers and all students

Challenges

- Sometime sustainable solutions cost more and time to explore what is the best choice is needed. Time and money remain a challenge
- To engage every teacher in the school and ensuring that sustainability is implemented in other lessons
- Pedagogically it can be challenging to navigate tensions around different forms of agriculture when having students who are closely connected to the agricultural sector in the same classroom as students who do not have an agricultural background
- Sustainability has to become in everyone's DNA before it is in every lesson!
- Hard to keep track of all the progress and have a clear action plan when there is so much going on throughout multiple aspects of the college. This needs to link better to monitoring, evaluation and assessment

A vision that is built by the staff itself is helpful. And again: You need someone who carries it out. Further: People at the right place and a good vibe in the organisation make things work. A person who has time to facilitate the working groups and connect between teachers and other staff is essential, this is what makes things go faster.

Another example is the construction of our 'Zuiverende kas' a purifying greenhouse. This year we are organising working sessions with colleagues and external partners to translate this system of the 'zuiverende kas' into our curriculum. This is an example of us developing innovative education together. Also, our campus has visual sustainability displays and signs around the campus. For example, the Doetinchem Campus school vision/mission statement is visible for everyone who enters the school.

South Africa • Longstanding Eco-School members

Special thanks to Alice Surmon, Arefa Haffejee, Nomfundo Ndlovu, Cindy-Lee Cloete, and the Wildlife and Environment Society of South Africa for this contribution

The National Curriculum and Policy Assessment Statement (CAPS) in South Africa shows education for sustainable development is incorporated into the curriculum[44]. Heila Lotz-Sisitka's analysis of CAPS showed "...that in some subjects, up to 50% of content is 'environment' or is related to 'sustainability'; and that environment and sustainability content permeates a wide range of subjects, in line with a curriculum principle that seeks to ensure an environmentally literate citizenry. [...] Because the Department of Basic Education (DBE) is concentrating on improving basic capacity in areas of literacy and numeracy, inadequate attention is being given to this new knowledge area (environmental and sustainable development knowledge) that is essential for improving the quality and relevance of teaching in South Africa"[45]. Therefore, as this environmental content knowledge continues to still be 'new knowledge' for many South African teachers, this has an impact on how environmental education is delivered within the school curricula. There is a need to capacitate teachers with professional teacher development on education for sustainable development.

Programmes such as the Eco-Schools programme are supporting Education for Sustainable Development in the national curriculum. Since 2003, the Wildlife and Environment Society of South Africa[46] (WESSA) have been coordinating the Eco-School programme in South African schools. The Eco-Schools programme[47] is centred on active learning through hands-on action to help promote sustainability in schools and inspire a generation of environmentally conscious individuals.

The two schools featured in this South African Contribution are longstanding members, with Pitlochry primary school establishing as an Eco-School in 2005, and in 2020 Amanzimtoti primary school[48] celebrated a decade of being an Eco-School. These examples offer up sustainability journeys that started off with a few dedicated teachers and have since grown to a whole school commitment. "The key features of the [Eco-School] programme are that it is holistic and participatory in nature. It promotes whole school development and improvement by educating learners and taking action to improve the environment in both the school and the local community. It is about environmental management and learning in a school whereby teachers, learners and community members get together and undertake a project to improve some aspect of environmental management" (from Pitlochry primary school eco-code). The following example is from Pitlochry primary school. For the second example please refer to the online edition.

Contribution by Arefa Haffejee, EcoSchool coordinator at Pitlochry primary school (grade 1-7 government funded public school):

Pitlochry primary school has been working with sustainability-oriented education for the past 17 years. We have been supported by WESSA since becoming an Eco-School in 2005. Valuable resources can be found

1) School garden clean up, learning sustainable solutions, learning from trial and error! 2) School nature lesson

Key WSA Principles in action at ***Pitlochry primary school***

Capacity building

- Eco-Schools and WESSA is a main resource for ESD related teacher training and learning materials
- Peer to pear professional development

Vision, Ethos, Leadership & Coordination

- A strong and well-developed vision that the whole school commit to
- Head teacher is very committed
- School has prioritised sustainability and environmental education for over 17 years

Curriculum

- Majority of school subjects include sustainability. For example, learners are taught data handling in Maths using information about recycled materials collected
- Eco- School activities are linked into the curriculum

Pedagogy & Learning

- School uses a cross curricular approach to identify how the relationship between human rights, social justice, inclusivity, and a healthy environment can be emphasised in all teaching

Institutional Practices

- School garden
- Health and Wellbeing measure in place, including sustainable sanitation toilets and healthy eating campaigns
- Constant monitoring and sustainable measures happen at the school and are used as learning opportunities
- Energy key focus of the school - Monitoring electricity consumption. Developing leaders amongst learners and teaching them how to record data with energy checks, and the school makes their own solar electricity.
- Waste is another key focus, recycling and water conserving
- Making of Eco-bricks to build seats for learners to eat their lunch

Community Connections

- Community & Heritage is one of the school's key areas of focus: Giving back to the community, promoting a sense of community amongst learners, making learners aware of their heritage and respecting diversity among learners

ADDITIONAL SOUTH AFRICAN CRITICAL CASE STUDY IN ONLINE EDITION

on their website curriculum links for each theme. This makes it easier for the teachers to complete activities and incorporate environmental education in the teaching and learning process. We have a very well-established Eco School Policy[49] at our school. The Eco Committee at Pitlochry Primary plays a key role in achieving this and forms the leadership of our Eco-School Programme. The committee represents the whole school community. Our committee has 3 main purposes: 1. To ensure a whole school approach about caring for the environment; 2. To design programs that give learners responsibilities and promote teamwork; and 3. To develop a structure for the Eco-School Programme.

Currently our Eco School Focus Areas are:

- Community & Heritage – Giving back to the community, promoting a sense of community amongst learners, making learners aware of their heritage and respecting diversity among learners
- Nature and Biodiversity – Redoing the school gardens with indigenous plants to create succulent gardens, creating different ecosystems for learning.
- Health & Wellbeing – Making learners aware of the different food groups to maintain a healthy lifestyle. Helping them to learn to live sustainably. Improving the school toilets for a learners' health and wellbeing.
- Energy - Monitoring electricity consumption. Developing leaders amongst learners and teaching them how to record data with energy checks.
- Waste - Enhancing our recycling programme. Making of Eco-bricks to build seats for learners to eat their lunch. Making of CD string to prevent vervet monkeys from taking learners' lunch.

In terms of Curriculum, Implementation and Monitoring, we link Eco-School activities into the curriculum in different ways. We embrace a cross curricular approach to identify how the relationship between human rights, social justice, inclusivity and a healthy environment should be emphasised in all teaching. Staff continually give feedback and report work completed. Staff also document the process and encourage learners to write short articles for Facebook, the D6 (a school-parent communication platform), and local papers. There are also monthly class progress reports where a Green Award is given to the class who attains the most points for having been environmentally conscious.

What has changed over the most recent years is that sustainability is now part of most subjects taught at the school. Most of our lessons incorporate environmental education for sustainability. Learners are even taught data handling in Maths using information about recycled materials collected. The Eco-School Programme is linked to the CAPS curriculum in the following ways:

Natural Sciences	Emphasises the importance of biodiversity in life support systems.
Social Sciences	Learners' abilities to identify and analyse a range of environmental and developmental issues is emphasised.
Life Orientation	Emphasises environmental health, and creates links between human health, and creates links between human health and environmental health risks (e.g. water pollution).
Economic and Management Sciences	Sustainable developments and growth, and calls for approaches to reduce waste and protect resources is emphasised.
Arts and Culture	The importance of cultural and natural heritage is considered.
Technology	Emphasises the importance of environmentally friendly designs and encourages learners to investigate technological impacts on the environment.
Languages	Critical literacy skills needed to analyse and address environmental issues and risks is developed.
Mathematics	Develop numeracy skills needed to address environmental issues and risks.

Inclusion: All learners regardless of race, gender, culture or disability are given the opportunity to participate. Learners are given active participation jobs. For example, 'Energy busters' are responsible to check on lights and fans, recycling bins are monitored for good use and all students are part of our whole school recycling efforts to collect bread tags, plastic bottles, ink cartridges and newspapers.

We are committed to, for example; selecting material related to the environment, from the curriculum, and relating this to the eco-school action plan; identifying basic environmental problems and motivate learners to explore and solve them; cultivating individual people's awareness of the environment; encouraging critical thinking; teaching lessons in an outdoor environmental situation; protecting indigenous plants and habitats in the school ground; and bringing about a supportive and democratic learning process in the classroom or learning situation.

Examples of a WSA in action on campus is the newly installed JoJo tanks to flush our toilet systems. These were installed in the new toilet block that was built two years ago. The new block is run on solar power. We plan on using solar energy throughout the school. We have gardens outside classrooms that learners use during natural science lessons to study different ecosystems. Learners make boats with recycled materials and sail them across the pool.

A good starting point for us has been the edible garden. This can be done on a budget, as it can be started using slips or seeds donated by learners. The garden consists of vegetables, fruit or herbs depending on the interest. Another low-cost starting point is to make a '*wormy*', or to paint old tyres and plant '*spekboom*' plants which reduce the carbon footprint. Also, to use permaculture principles to set up watering systems for the school garden. While

Water explorer project

expensive to invest in, the solar panels in the new block have been a worthwhile investment as now we still have electricity during load shedding times and lessons continue.

In our experience Primary school learners care about the environment and are willing to help save it. Learners are motivated to collect bread tags to fund the wheelchair campaigns; they participate in the food for needy campaigns and prepare sandwiches for the poor; they are motivated to take ownership of the school's gardens and environment. They are also keen to go on beach clean-ups, nature hikes and learn new skills like how to test river water. Motivated learners motivate others, so this school culture continually develops, and this awareness raising is helped through our assemblies and newsletters. Some projects work and some fail, but if you persevere it works out in the end and you learn through trial and error!

Strengths/Prospects *(from both schools)*

- Teachers are the key to changing the mindset of learners and they can instil good environmental values among learners from a young age.
- Not being afraid to make mistakes and learn from them
- Curriculum does include ESD related content
- Long standing school culture for protecting the environment
- Supportive management

Challenges *(from both schools)*

- A challenge but also an opportunity for teachers to build up more hands-on experience for learners to understand problems and develop solutions, this provides opportunity to develop problem-solving activities for learners.
- Not all teachers are driven and some focus only on curriculum delivery.
- Teachers need more professional development concerning ESD and connected pedagogical approaches

USA • Chicago based Global Citizenship Experience (GCE) Lab School

Special thanks to Stephanie Leite and Aaron Moring-D'Angier for this contribution

The United States does not have a centralised, national curriculum. Each state has its own department of education, which sets educational standards, curriculum frameworks, standardised testing schedules, and teacher certification requirements. Schools may be classified as public (funded through taxes and run by the government) or private (funded and run by non-governmental entities). Independent schools are a special distinction of private schools that are classified as not-for-profit and governed by a board of trustees or directors. Private and independent schools are not obligated to follow the standards and testing requirements of the state in which they are located. In an effort to standardise curricula across the 50 states, the federal government introduced the Common Core State Standards Initiative[50] (CCSSI) in 2010, which details what students should be able to know and do in English and Mathematics in grades K-12. Forty-one states use the CCSS, but adoption is optional (CCSSI, 2022). In 2013, the Next Generation Science Standards (NGSS) were released, providing recommendations for K-12 science education. The NGSS were developed through a multi-year committee process and in collaboration with a consortium of 26 states. Yet less than half the states, plus the District of Columbia, have adopted them[51].

The NGSS include the subtopic of human sustainability and approach sustainability "as a set of global problems affecting all humans equally and solvable through the application of science and technology"[52]. However, they have been critiqued for not including the ethical, social, and political dimensions of sustainability challenges (ibid.). While a WSA to ESD is not commonplace, nor promoted nationally in the USA, there are numerous standalone examples of schools that have taken the initiative to meaningfully engage with a WSA. The following independent lower-secondary school in Chicago, Illinois offers multiple entry points and examples of ways they have embraced a WSA.

Global Citizenship Experience (GCE) Lab School, serving students in grades 9–12, has consistently been named one of the most diverse private schools in Chicago[53], with students commuting from 35 neighbourhoods in Chicago and 6 surrounding suburbs. The school follows a flexible tuition model that ranges from $4,550–$29,150 USD, with 86% of students receiving tuition assistance. The student body includes 53 students, with plans to grow to 175. The school was founded on the belief that to cultivate responsible global citizens in the 21st century, the traditional transmissive models of education needed to be rethought from the ground up. The keywords in the school's name—*global, citizenship, and experience*— have shaped the mission, identity and operation of the school since its inception in 2010.

The staff and faculty at GCE want the school not only to have focus on the global citizenship experience, but to embed these three key concepts into the DNA of the school. Figuring out what this means and how to do it has been a lengthy, ongoing process. In GCE's first two years, faculty and staff spent hundreds of hours on collaborative professional development in efforts to "unlearn" the deeply ingrained habits and expectations they had brought with them from previous educational environments. Teachers had dedicated time each week to write curriculum, reimagine assessments, test lesson plans, establish community partnerships, and support each other in this intensive work. Early in the school design process, GCE adopted sustainability pedagogies[54] with an emphasis on real-world, inquiry-, and project-based learning. This learning approach meant that the *how* and *why* of learning were foregrounded, and the *what* (curriculum) was an extension of these methodological values. A whole-school approach was needed to support such a learning model, so the mission, professional development, schedule, and curriculum were all in alignment. As a result, several features were built into GCE's core that may offer inspiration to other schools:

Vision and Leadership • GCE's Portrait of a Graduate (POG) resulted from a year-long strategic planning process that included a survey of the GCE community (including students, staff, parents, alumni, and board members) as well as research into 21st century learning frameworks put forth by organisations such as P21[55] and World Economic Forum[56]. The POG includes five characteristics that describe a global citizen, according to the GCE community: Real-world educated; professionally prepared, culturally competent, independently motivated and consciously innovative. The POG guides the decision-making at all levels of the school, with the overall goal being to cultivate

graduates who have an understanding and awareness of the wider world and how it works, a sense of their own role as a world citizen, and who are willing to act to make the world a more equitable and sustainable place.

Curriculum, Pedagogy and Learning • Curriculum and pedagogy are inseparable at GCE. Starting in Grade 9, students begin a 4-year learning journey designed around integrated themes. Students take two core classes each term (one STEAM and one Humanities), which are supplemented by targeted skill-building classes in areas such as mathematics and writing, as well as areas like computer coding, woodworking, podcasting, and ethnography. STEAM is an educational approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue, and critical thinking. The themes for each term are meant to complement each other; for example, Grade 9 students take the *Food* STEAM course, which focuses on ecology, chemistry, and genetics, at the same time as they take the *Food for Thought* Humanities course, which investigates world history and geography through the lens of global food trade. This overlap encourages interdisciplinary collaboration in lesson planning and field experience excursions.

The curriculum is aligned with the Common Core State Standards and Next Generation Science Standards. In addition, each course is aligned with at least one SDG Target. For example, in the Water course, students learn Algebra and Earth Sciences while also investigating SDG 6 and how to achieve universal access to safe and affordable drinking water, sanitation, and hygiene. Most GCE courses are divided into three units, each of which follows a three-

Key WSA Principles in action at ***GCE Lab Secondary School***

Capacity building

- All faculty and staff receive training in inquiry and project-based learning
- Teachers complete a Model the Learning experience that introduces them to the curriculum and invites them to customise courses for themselves and their students
- GCE offers professional development in teaching and designing project-based learning at other schools

Vision, Ethos, Leadership & Coordination

- GCE's Portrait of a Graduate guides the cultivation of graduates who have an understanding and awareness of the wider world and how it works, a sense of their own role as a world citizen and are willing to act to make the world a more equitable and sustainable place
- The Portrait of a Graduate guides decision-making for curriculum and other school programming

Curriculum

- Courses are interdisciplinary and thematic to foster critical and systemic thinking. All courses are aligned with the UN SDGs as educational standards, which provide a curricular grounding in sustainability and social justice
- Curriculum is digital and frequently updated with current case studies, news stories, and real-life data
- Imagining a Sustainable Future is a 3-part open-source curriculum that introduces students to the science of climate change (ReFueling the Future), design and systems thinking to propose solutions (ReDesigning the Future), and policy levers that can be used to enact change (ReMobilizing the Future)

Institutional Practices

- The campus is designed as a living laboratory for collaboration, community-building, data analysis, and critical thinking
- Features such as a living wall, aquaponics system, and rooftop garden will immerse students in a learning environment where they engage with natural systems and cycles

Pedagogy & Learning

- Sustainability pedagogies including inquiry- and project-based learning form the basis of GCE's learning model
- Teachers act as facilitators who model the learning process with students
- Learning is collaborative and student-driven. Students are encouraged to adapt projects and assessments, so they are customized according to interest and need

Community Connections

- Weekly field experiences out of the classroom and into the city allow students to make real-world connections and test classroom learning with local experts
- The Professional Immersion Experience for students in Grades 11-12 is an opportunity to become immersed in an internship with a business or organization of their choosing

During Covid-19, grade 9 students study SDGs 3 and 5 by meeting with artists to explore why gender disparities exist and persist, and how those issues often manifest as unsafe, insufficient, and/or inaccessible healthcare

part experiential cycle: 1) Internal Investigation (students pursue guiding questions that result in understanding foundational concepts); 2) External Investigation (real-world experiences provide context for classroom learning); and 3) Action Projects (students synthesise learning from Internal and External Investigations in multimedia projects). GCE's curriculum is digital, and teachers dedicate 3 weeks each summer to curriculum revisions, a process that includes updating multimedia sources, refining rubrics, and revisiting guiding questions.

Assessments have been an ongoing challenge for GCE. Currently, student evaluations are based largely on end-of-unit action projects, which include a rubric designed using a 100-point scale. Each action project has a suggested rubric, which teachers often modify in consultation with students when a new action project is introduced. GCE is a member of the Mastery Transcript Consortium (MTC), which is working to design and pilot an alternative to GPA-based transcripts and engaging with higher education institutions to rethink admissions indicators. The efforts of MTC are lessening the burden on GCE's school counsellor, who spends many hours on the phone with college admissions officers, interpreting GCE's courses and translating them into more familiar subject-based terminology.

In 2019, GCE partnered with the renewable energy investment company Greenbacker Capital to design a three-part curriculum series entitled Imagining a Sustainable Future. The series is designed to encourage collaboration among teachers from different disciplines. It approaches sustainability from a science, design and engineering, and civics perspective. These open-source projects are available for teachers to download and supplement traditional curriculum. Each of the three projects can be taught on its own or as a full package in regular classrooms, after school programs, or summer enrichment classes. The series begins with an introduction to the science of climate change (ReFueling the Future), then introduces design and systems thinking to propose solutions (ReDesigning the Future), then presents policy levers that can be used to enact change (ReMobilizing the Future).

Community Connections • GCE's weekly schedules are structured around hands-on field experiences. Each Wednesday, the schedule is divided into two long blocks, so students spend 3 hours in each of their core classes (STEAM and Humanities). This longer block gives teachers the opportunity to either plan a field experience into the city, host a guest speaker, or have dedicated time to work on a project. Example field experiences include neighbourhood walks and observations; meeting with non-profit organizations; visiting surrounding universities; interviewing local business owners; speaking with politicians; attending a play or other cultural event; or any other experience that can be conducted in the time allotted. There is a small budget available for field experiences, but most are arranged free of change, and the only cost is public transportation for students. Field experiences allow students to connect and test what they're learning in the classroom with real-world applications. Many field experience partners go on to host GCE students for a Professional Immersion Experience, which students in Grades 11 and 12 participate in each December.

Capacity Building • The onboarding process for new staff members at GCE includes an introduction to inquiry- and project-based learning. All employees are required to participate in this training, even if they are not classroom

teachers. This reinforces the school culture that learning happens anywhere, at any time, with anyone. Teachers also participate in a Model the Learning course, which guides them through the process of being a student in their own classroom. As teachers new to project-based learning, this requirement allows them to get to know the courses they will teach, do sample action projects, modify rubrics, test sample lessons, and get feedback from peers. GCE offers these training modules as professional development courses to other educators and schools who are introducing project-based learning.

"There is a through-line in the history of GCE Lab School about working within boundaries and means, while at the same time pushing forward with ambition and vision. Because we have integrated courses and dedicated time to get into the real world, we can lean on existing structures to continue our ambitions rather than fight against a system designed for unsustainable practices: our school was designed to remove many of the internal institutional barriers, leaving us more time and energy to push past other barriers such as social expectations, limited resources, and the problems facing our world at large. This is reflected in our use of the UN Sustainable Development Goals to guide our curriculum and class explorations."

Aaron Moring-D'Angier, Curriculum & Instructional Specialist, STEAM Teacher

Institutional Practice: GCE moved into its first dedicated space in 2022, 12 years after it began admitting students. Until then, the school rented space from other organisations and community centres until it raised the funds to purchase a location in downtown Chicago. The design process for the new campus was a collaboration among three architecture firms: One specialising in social justice, one in sustainability, and one in educative design. The resulting design was influenced by more than two years of planning, with input from students, staff, and the wider GCE community. For the first time in its history, GCE's campus is an expression of its core values and educational model.

The new campus includes spaces such as an open teaching kitchen, a living wall and a community circle to create dynamic areas for collaborating, socialising, and community programming. Data on energy usage and air quality are prominently visible, and this information can be used in STEAM classes and school-wide activities. Plans are in the works to build an aquaponics system and a rooftop garden or apiary. Students engage in a mixture of low-tech and high-tech tools, including a wood shop equipped with a table saw and drill press, as well as a digital fabrication lab with a laser cutter and 3D printers; a manual typewriter lab housed in the same room where students learn computer coding; and a music room where students play store-bought instruments or build their own as part of a STEAM course. In terms of facilities and operations, one long-standing challenge for GCE has been its food program. Due to budgetary constraints and lack of certified food facilities, it has been difficult to build a food program that reflects the school's commitment to sustainability and responsible consumption. The new campus includes plans for a teaching kitchen that will be used for preparing community meals, composting waste, and nurturing a culinary culture at GCE.

Strengths/Prospects

- GCE had the freedom to build the school model from the ground up and did not need to transition from a previously established school model
- Staff realised the importance of "unlearning" the deeply ingrained habits and expectations that stand in the way of sustainability
- A small staff and student body make the GCE nimble and well-equipped to experiment with new approaches to schedules, calendars, and curriculum
- Connecting the curriculum to the UN SDGs offers immense opportunity for inquiry-based learning and making connections between local and global issues

Challenges

- The work is intensive and there is always a risk of teacher and staff burn-out
- There are many well-established and reputable private schools in Chicago. Convincing families to invest in GCE's approach to learning can be challenging
- Assessing and communicating student performance is an ongoing question. Until higher education moves away from GPA-based student evaluations, GCE will need to translate the school model into language that colleges understand
- Being located in an urban environment can make a focus on sustainability a challenge. Making connections between social and ecological problems is difficult when many students witness and experience violence and extreme income disparities across the city

GCE has spent over a decade refining the elements of its WSA to sustainability and continues to revise each dimension in response to the needs of students, families, and the world. A longstanding commitment to community-building has led to a sense of shared ownership and trust among students and staff; this trust in turn enables support for innovation and experimentation. For other schools transitioning to a WSA approach to sustainability, this stakeholder buy-in is essential, so that the resulting school model is localised and relevant to the community it serves.

Transitioning to a whole-school, project-based learning model can be difficult and time-consuming for teachers and staff. Shifting from being a "teacher of content" to being a "facilitator of learning" changes engrained power dynamics with students, as well as approaches to lesson planning. The unpredictability of a project-based environment can be unsettling and physically draining for unaccustomed teachers. Therefore, it is essential to build in supports such as mentoring sessions, extra planning time, and ongoing professional development.

Students also experience an adjustment period when they arrive at GCE, as school-related habits and expectations are modified. Since the program only starts in Grade 9, students enter the school with years of training in a more traditional "banking" model[57], where they are not required to participate, and where test grades are the primary measurement of success. On average, students need six months to adapt to the high demands of a project-based setting and GCE's intimate environment where every staff member knows them and checks in on them. The personalised approach to curriculum is unfamiliar to the majority of new students, and it takes time to build agency and confidence.

On September 20, 2019, GCE Lab Schools students participated in the Global Climate Strike in Chicago as a part of a series of international strikes and protests to demand action be taken to address climate change. The protests took place across 4,500 locations in 150 countries and were a part of the School Strike for Climate movement, inspired by Greta Thunberg. The September 20 protests were likely the largest climate strikes in world history

Cyprus • A cross curricular holistic approach involving school, family and wider community

Special thanks to Diamando Georgiou, Vasilis Papastavrou and Aravella Zachariou for this contribution

ESD is at the core of the Cyprus Education System, and many reforms promoted within the National Strategy on ESD aim to integrate ESD in a holistic and comprehensive way in all educational levels. The National Strategy on ESD includes several policies which support its implementation in formal, non-formal and informal level. Main policies that support the sustainability- oriented education are:
The ESD National Curriculum constitutes a hallmark for ESD in Cyprus as it highlights the transition from the marginalised and occasional study of environmental issues in schools, to the holistic approach of these issues as a fundamental part of the educational vision and policy of each school in the country. The ESD curriculum's structure includes 12 thematic units (i.e. forests, energy, water, waste management, urban development, production and consumption, desertification, transport systems, poverty, culture and environment, biodiversity, tourism) of national, regional and global interest. The school subjects (modern Greek, maths, science etc.), operate as tools for an interdisciplinary- holistic exploration of the thematic units. The ESD curriculum has been allocated time within the timetable of primary education (Stages 1–4: two teaching periods per week [2 sessions of 40 min each] within the interdisciplinary area of "Life Education"; Stages 5–6: one teaching period per week [1 session of 40 min]). This time is to be used over and above the time used for activities within other curriculum subjects, so as to facilitate additional actions[58].

The ESD Curriculum is based on indicators and learning outcomes, which are differentiated according to the age of the students: All the indicators and learning outcomes in each grade (pre-primary and primary) are developed gradually on the axes of knowledge, awareness, skills, attitudes, values and participation/ action. The curriculum is developed in 6 main success indicators, 21 achievement indicators[59] and the learning outcomes for each thematic unit[60].

The enactment of the **Sustainable Environmental Education Policy (SEEP)** in pre-primary and primary education aims to integrate Whole School Approach in every school.

The SEEP is developed by the whole school and the entire school works together towards its implementation. It responds to the needs and particularities of the school unit and the school's immediate environment. The issues of the SEEP are agreed and everyone in the school engages in their exploration and study through the curriculum's thematic units. SEEP requires the cooperation with the community and the formation of collaboration networks with organisations and institutions. Its evaluation takes the form of schools' self-evaluation in pedagogical, organisational and social levels and the outcomes become the basis for its continuation in the long-term[61]. The integration of ESD in schools is supported by teachers' professional development on ESD, which is organised on both an obligatory and on an optional basis. For example, the compulsory education and training courses which focus on primary teachers' training for the implementation of the National Curriculum of EE / ESD are implemented centrally on an annual basis. In these courses, teachers are introduced to planning their school's ESD School plan (SEEP), to developing ESD lessons using the interdisciplinary approach, to using various ESD pedagogical techniques such as concept maps and moral dilemma, simulations[62]. An important innovation for ESD professional development in Cyprus is the introduction of professional development courses for newly appointed principals. Through these courses principals and deputy head teachers are guided on how to coordinate the development and implementation of SEEP in their school's context[63].

While policies and measures regarding ESD implementation have been adopted in Cyprus, challenges remain. For example, teacher incentives for working in a more systemic way on ESD is lacking. Moreover, despite the fact that schools are provided with a self-assessment tool aiming to help them to identify the degree of achievement of their SEEP, there are gaps and weaknesses. For example, an accreditation scheme that will certify a school that operates towards sustainability is missing.

Geroskipou A' Primary School is located in the Geroskipou municipality in Paphos province. The municipality has a population of about 8000 people and even though it is considered a rural school, it is near Paphos City. Most of the students are local, however there is a considerable number of students who are emigrants. This Primary school develops its own SEEP which has been implemented

through the ESD Curriculum since 2013, when ESD was officially introduced in Schools. SEEP is not developed in schools on a voluntary base, but it is a mandate. SEEP is long-term and usually is planned for 2 or 3 years.

Through SEEP our school investigates the biodiversity in Cyprus in relation with our culture. Our school pursues certain changes based on the specific objectives and actions that are identified in the SEEP assessment. This is on by all the participants (school and community) as pre-requisites for creating a school and community culture for protecting the biodiversity of our land.

For example, the following changes were made:

- **School organisation**: Establishment of material recycling system, stationery reuse, clothing recycling and, a vegetable garden was created and students take care of it. The vegetables produced in the school by the students with the support of their parents, are sold to the municipal market by the students. The money collected is used for replanting as well as for other school activities related to the greening of our schools and for further activities that will transform our school towards sustainability. Moreover, students participate in local agricultural activities such as helping locals to collect olives and carobs. These outdoor learning places make the learning process more attractive and meaningful to students.
- **Pedagogical techniques**: Our school incorporates innovative teaching approaches that are also promoted by the national ESD curriculum to enhance and facilitate indoor and outdoor learning such as brainstorming on relevant concepts with biodiversity. Also, field studies, problem solving role play, project-based learning activities, case studies and surveys are used.
- **Social skills**: Our school works together with the parents' association, the local community and non-profit organisations (like Akti Project and Research Centre) in order to fulfil the school plan for moving towards sustainability.

The schools' WSA approach • Partners (school, teachers, school personnel, community, NGOs…) come together to plan the school SEEP. At first, teachers guide students to identify environmental and sustainable issues that impact the well-being, the quality of life and the sustainability of their school and community. The issues are identified and discussed, and the participants in SEEP jointly agree on the issue that will be investigated. In the SEEP, justification as to the selection of the specific issue for study is provided, with reference to the reasons why it was chosen, its importance and the learning outcomes for the students regarding knowledge, awareness, skills, attitudes and competences. The SEEP is implemented by all the school. Each class (teachers with their students) organises its plan, which includes the way that the class is

Key WSA Principles in action at ***Geroskipou A' primary school***

Vision, Ethos, Leadership & Coordination

- School vision includes input from the wider community, promoting intergenerational communication and learning outside the class
- All the school plan developed jointly with the school, the community, and the professionals
- The Sustainable Environmental Education Policy (SEEP) in pre-primary and primary education, aims to integrate Whole School Approach in every school
- A WSA to ESD vision supported nationally by the government

Curriculum

- The national curriculum has an ESD focus including 12 thematic unit
- This is also connected to the SEEP initiative (above)

Pedagogy & Learning

- Project based learning - the community and its environment as a place of learning. In cooperation with municipal authorities, students, teachers, and parents worked together

Institutional Practices

- Utilisation of rainwater for watering pots and plants in the corridors. Every time it rained, we collected rainwater from the roof tabs in buckets and during the break, children watered the pots that were in a covered area
- The biodiversity park has sparked many behavioural changes in the school beyond the garden

Capacity building

- Peer to peer teacher training scheme
- Top-down support for example from - the Unit of Education for the Environment and Sustainable Development
- Parents teachers and professionals from the local community have been engaged with running workshops to support the primary biodiversity park the school manage

Community Connections

- meaningful relationships and cooperation among the school community and local society because of SEEP and the biodiversity park project
- The school with the community explored the issue "protecting the biodiversity of our land through the culture and civilization" – the outcome being - To create a green park for biodiversity next to the school which for its maintenance responsible is the school and the community together

going to work to contribute to the achievement of school SEEP (activities, subjects that will be used). The plan of the class is monitored by teachers and students. At the end of the school year, a self-reflection – self assessment – takes place for each class and for the school SEEP. This, based on qualitative criteria on organisational, pedagogical, technical, and social levels, operates as a tool for helping the school and the community to identify what has been achieved, what difficulties and obstacles emerged, as well as what remedial measures can be taken for more effective implementation of the SEEP.

The cross curricular approach reflected positively in our effort to apply a holistic approach in our SEEP. The interdisciplinary approach of the issue, in addition to collaboration with parents, children, grandparents and community members, facilitates the school to operate as an open community of learning to improve the quality of life in the school and in the community.

At the same time, we wanted to operate as an example of a school that apply ESD in everyday school life through the implementation of our SEEP. For this reason, we invited the students at the neighbouring school to our school, we presented them with our SEEP and we explained how we worked to implement it. We showed them our green corner, we explained in the field what plants we chose to include and why, how we work with the parents and local populations, and how they supported us to promote our products.

3 Ideas for a WSA in Action:

- Utilisation of rainwater for watering pots and plants in the corridors. Every time it rained, we collected rainwater from the roof tabs in buckets. During the break, children watered the pots that were in a covered area. We used leaves that fell from the trees of our environmental corner and other green materials for making compost and fertilising the pots and our herb garden.
- Establishment of a recycling system of various materials in the school. We bought recycle bins for each classroom and larger bins for the schoolyard. In collaboration with the community, these materials were collected once a week from the entrance of the school and transported to the Green Point of the Municipality of Geroskipou.
- Creating a vegetable garden. We needed a budget for fencing the area, for the purchase and transfer of suitable soil, for the purchase of tools and for the installation of an irrigation system. After this initial cost, the vegetable garden was cost free since the maintenance was undertaken by the children, teachers and parents. In addition, we used money from vegetable sales to fund any other expenses that came up regarding the vegetable garden and other school activities.

Vision, Ethos, Leadership & Coordination • The principal of the school supported and facilitated the development and implementation of SEEP. She allowed the internal changes in the school timetable to facilitate cooperation among teachers. The school principal supported all the activities that were planned and implemented, and also contributed significantly to the establishment of good relations with partners and the local community. Last but not least, was her role in securing the necessary financial resources to implement our actions. From our experience we learned that if you don't have an inspired principal with a vision and willingness to reorient his/her school towards sustainability, ESD and sustainability actions in schools cannot be collective and participatory and cannot be sustained.

Institutional Practice • Getting to know, preserving and maintaining the flora of our community in a sustainable way was our main goal. Students visited nearby areas with olive and carob trees, learned how they connect with peoples and local society. Moreover, they learned about traditional jobs, customs and traditions and traditional products concluding that the natural environment of their community contributed significantly to give shape to their local civilisation. Through this, students realised their own potential and responsibility in protecting their immediate environment in a sustainable way to deliver it to the next generations in the same way the previous generations delivered it to them. They learned and appreciated the intergenerational communication and interaction. Moving to a sustainable way of life needs time. Students managed to change certain behaviours. However, they still need to stay on track to maintain a sustainable way of thinking in order to incorporate its added value and transform their attitudes and actions towards the environment. For example, we noticed that they stopped leaving garbage nearby the vegetable garden, but garbage was still thrown at other places of the school. Moreover, even though they took care of the trees in the environmental corner, they did not seem to be interested in taking care of the other trees and plants in the school. On the other hand, we observed that the students that were more actively engaged in planting the vegetable garden, and they were more aware of protecting and taking care of their garden; they advised and urged their classmates not to cut flowers or plants for no purpose. So, even though switching to sustainability needs time, we were proud to notice that our students made their "leap of faith" towards it.

Capacity Building • Teachers had the chance to train with other schoolteachers that had expertise in the relevant subjects. In addition, we asked environmental organisations to provide us with professional development courses on specific issues such as planting. We also required the Unit of Education for the Environment and Sustainable Development to support us and guide us practically on

designing and implementing our SEEP. We organised various workshops in school with the engagement of teachers, parents and professionals who trained us in the field on agriculture and local crops.

Community Connections • Our local community is relatively small, so we had the chance to establish meaningful relationships and cooperation among the school community and local society. Municipal authorities support us in many ways such as transferring olives and carobs to the mill. Grandparents helped students to package olives in a proper way. The municipal workers also took care of the trees in our "Environmental Corner". Students were taught by local people about sericulture - to care of the silkworm from the egg stage through completion of the cocoon. Geroskipou municipality bought reusable bags for all the students to help eliminate plastic ones.

Curriculum • The curriculum of environmental education/ education for sustainable development defines and enhances the formation of the SEEP of each school. Our School SEEP was based on students' needs and interests. Each class followed the plan that was prepared by their teacher by choosing learning outcomes that were appropriate for their age and grade. We had the chance to self- reflect and self-assess our work process, to write down which outcomes were fulfilled, what obstacles we phased, and how we solved them. Moreover, the SEEP self-evaluation helped all the school to identify the next year's sustainability actions.

Pedagogy & Learning • Through project- based learning, students investigated the kinds of trees that exist in their area, their use and impact on their community over the years. We used our community and its environment as a place of learning. We learned the importance of collaboration to improve the quality of life in our school and in our community. In cooperation with municipal authorities, the students, teachers and parents planted trees in a nearby area. We adopted that area and transformed it to a place where people can feel the positive energy of nature. We gave the example experientially and in real situations of how an abandoned place can come into life and benefit the whole community.

Strengths, challenges, opportunities & threats • The holistic approach allows for interdisciplinary approaches. All the subjects are used as tools for integrating the learning outcomes of the ESD curriculum, which relates to the School SEEP assessment. A challenging issue encountered was to find a common time for teachers' coordination and for preparing and implementing joint activities. In this case, the school principal had to search for and allow changes to each teacher's teaching schedule that sometimes was not an easy procedure. An additional challenge was the in- service training of teachers. Teachers needed school- based training on how to practically apply various teaching practices in their specific school context and community. This wasn't easy to achieve because of the strict schedule of the school and other priorities.
The holistic approach requires a different way of school operation and reconsidering the teaching processes. Engaging the local community and parents in many of the school activities and actions wasn't always easy because of the schools limitations. Accordingly, activities outdoors, in farms, in local trades and in the municipal market needed time and very good planning, which sometimes was challenging. Furthermore, biodiversity as a subject connected with the culture of the community was a local

1) Elder generations teach youngsters to make olive pie, 2) Parents, teachers, children and local authorities, collecting carobs

based issue. This demanded, the preparation of new materials based on the specific objectives of the SEEP, despite the existing educational materials on ESD. This could be seen as a burden because it wasn't easy for teachers, amongst other commitments in the school. One more challenge we had was the maintenance of our green yard, especially during the summer, when the school was closed. This challenge was overcome with the support of the local authorities which, in collaboration with the teachers and students, organised teams of volunteers which visited the school on a weekly basis to take care and do the work that was needed for sustaining our green corner.

Students need to realize their potential in transforming our world to a more sustainable place of life to have a positive impact on climate change and help our planet survive. This can only have a real impact on to their lives and encourage a better way of living for them and their environment if they are actively engaged in a meaningful way. We strongly recommend that students are actively engaged in developing of their ESD School action plan. It's important to give them voice and listen carefully to their needs, what they want to change and how they envision their school and their community in the framework of sustainability. Additionally, we suggest to our colleagues when they engage in School ESD plan development, to have their students in mind. The objectives and the intended outcomes must be feasible for the students. Another suggestion is to engage local partners or organisations that can help implement and monitor the action plan. In addition, it is vital for teachers to feel that they are not obliged to work for ESD. They must be self-motivated to engage actively. Supporting them in this direction is a critical factor for their empowerment and motivation.

Professional development and incentives are critical for WSA. We have to listen to students, and we have to listen to teachers. In addition, we suggest the SWAT analysis to identify strengths and weaknesses of the interventions and actions that are planned. Also, peer-learning and establishing networks of collaboration between neighbouring schools strengthen the idea behind WSA, which sees schools as an open community of ESD learning.

Strengths/Prospects

- All the subjects are used as tools for ESD in this example and this in turn strengthens teacher cooperation
- Top-down commitment from the national curriculum to support a WSA to ESD through the enactment of a Sustainable Environmental Education Policy (SEEP) in pre-primary and primary education, which aims to integrate Whole School Approach in every school
- Community connections – examples from this primary school show how the whole community can be involved

Challenges

- More work needs to be done – an assessment and accreditation structure for following up the ESD national curriculum and SEEP is missing
- Finding staff who want to take on the coordination role – this is a specific skill
- Organising the schedule so teachers can have the time to plan together
- Preparation of new materials despite a lot already being made available

3) Vegetable garden care

United Kingdom • Ruskin Mill - A Whole School, for the Whole Child, in a Whole Community

Special thanks to Matt Briggs, Keith Griffiths, Aonghus Gordon and Ruskin Mill Trust for this contribution

This contribution presents a collection of UK based schools that provide a comprehensive example of relational place-based education for children with special needs in practice. In essence it is an example of a 'WSA in action' within the context of Specialist Independent Education[64] for children and adults with complex needs, including learning difficulties and autistic spectrum conditions. However, its key philosophy, principles and practices are relevant for all type of schools, especially its utilisation of creativity, the arts and of learning rooted in the local community. This integrated approach to education ESD offers multiple methods and practical examples for meaningfully integrating sustainability-oriented education.
It is important to note that most Ruskin Mill schools and colleges[a] work with students who come with, what is named, an individual Educational Health and Care Plans (EHCP). The EHCP is created by a multi-agency group (include government and independent agencies) specific to each young person a set of targets that are developed to reach longer term goals of becoming more independent and live healthy, purposeful, and meaningful lives. In this respect, the craft and land-based activities serve as vehicles through which each individual EHCP target can be addressed, tracked, developed, and assessed. Funding is provided by local authorities for each student's programme (or privately funded by parents/carers). This affords the schools independent status, which means they are not constrained or regulated by the national curriculum. However, they are still subject to regulatory inspection frameworks such as OFSTED, CQC and the independent schools' standards.

Contribution by Ruskin Mill Trust - Matt Briggs, Researcher and Lecturer, Aonghus Gordon, Founder & Executive Chair and Keith Griffiths, Head of Staff Education and Training: A collection of 9 primary, secondary and upper-secondary schools (age 5 – 25)

Ruskin Mill Trust (RMT) operates in England, Scotland, and Wales, offering exciting outdoor learning environments, utilising practical land and craft activities to support the development of work and life skills in young people with autism and other learning difficulties. For over 30 years, Ruskin Mill Trust has managed, among other residential placements and social care provisions, four schools (primary and secondary) and five upper secondary schools/ colleges (taking students up to 25 years of age). At both the schools and colleges students experience holistic learning by role modelling positive relationships in the fields of

a: In the UK the term college is also used for secondary school education

Tutor and student working collaboratively in the forge[65]

Key WSA Principles in action at ***Ruskin Mill primary & secondary schools***

Pedagogy & Learning

- The Practical Skills Therapeutic Education offers innovative WSA learning and assessment methods
- Co-developed individualised curriculum for each student

Curriculum

- Craft based curriculum offers examples of how social, economic, and environmental pillars of ESD can be taught in theory as well as experienced in practice
- A Whole Child, Whole School, Whole Community based Curriculum
- Curriculum connected to social enterprise

Vision, Ethos, Leadership & Coordination

- The vision, values and methods involve a strong emphasis on self, community and environmental developmental and renewal
- Seven Fields of Practice first step is a Genius loci audit. This ensures each school identifies a holistic place-based practical curriculum

Institutional Practices

- School grounds are managed following sustainable and ecological Biodynamic principals
- School farms and gardens produce food for the students' meals, sold in local community, and is used in some of the schools' outward facing cafes
- Sustainability policies in place, for example, for sourcing materials and products

Community Connections

- Ruskin Mill Trust's core purposes is to aid integration into community and contribute to society
- Students are encouraged to lead community and charity orientated projects such as restoration of community/heritage spaces

Capacity building

- Training and development opportunities for all staff and wider community is provided by the trust, from induction to a newly accredited master's degree
- The trust running the schools also support continual research and professional development opportunities for their staff through the 'Field Centre'

arts, crafts, commerce, agriculture, nutrition, living skills and the environment. By immersing students within the productive aspect of the curriculum, students learn to care for their own well-being and development and overcome their barriers to learning. This approach is also embedded within a research and training culture up to master's level delivered through The Field Centre providing opportunities for all staff and the wider community.

Vision, Ethos, Leadership & Coordination • The vision, values and methods at Ruskin Mill involves strong emphasis on self, community and environmental development and renewal[66]. The method developed called *Practical Skills Therapeutic Education* helps learners overcome barriers to learning, become skilled and contribute to community. Practical Skills Therapeutic Education and the underpinning Seven Fields of Practice have been developed[67] by Aonghus Gordon OBE, drawing from the inspirations of Rudolf Steiner (1861 – 1925), John Ruskin (1819 – 1900), and William Morris (1834 – 1896). Working with hand, head, heart and place, through practical activities, performing arts, therapies, culture and social enterprise, Ruskin Mill Trust aims to help individuals to re-imagine their potential.

Curriculum, Pedagogy and Learning at Ruskin Mill • The Practical Skills Therapeutic Education has emerged from 35 years of practice and on-going research, and the Seven Fields of Practice provide the scaffolding for the student journey towards the aspiration of developing 'self-generated conscious action'. This goes further than autonomy to acknowledge the capacity and motive, to give back to community and earth. The co-developed curriculum, not hindered by national curriculum requirements, supports each student finding their own route to self-generated conscious action through experiencing meaningful relationships with universe, earth and people. Therefore, each curriculum is co-designed with the student to suit their needs. This offers examples of how social, economic and environmental pillars of ESD can be taught in theory as well as experienced in practice. For example, the seed to table curriculum enables students to experience being part of a healthy holistic experience of growing, harvesting, preparing and eating the food in school/college canteens and public facing cafes, as well as being part of veg box schemes for the local communities and supplying shops. Other aspects of the curriculum include, vocational and work experience opportunities, a mix of therapies, music, arts and drama. Each individualised curriculum is built through role modelling (both via practitioners/tutors and the consciously created environments and workshops in which they are placed and purposeful) and contemporary apprenticeship learning in which the learner is invited into a production/world-based focus/outcome of their learning and involvement. This is functionalised by situating individuals within the real-world environments of the biodynamic ecologies and farms, craft workshops, cafes/canteens and shops, to name a few.

Practical Skills Therapeutic Education • Practically applied principles, known as the Seven Fields of Practice,

Nature based practical education[68]

Staff and student in biodynamic school garden underpin the research-based method Practical Skills Therapeutic Education (PSTE), and guide each student's journey. These are: 1. Genius loci (spirit of place), 2. Practical skills, 3. Biodynamic ecology, 4. Therapeutic education, 5. Holistic support and care, 6. Holistic medicine and 7. Transformative leadership. In terms of place-based learning and community connections, the first field of practice (connected to Genius Loci) is an example of how a school can become further embedded in their local community and surroundings.

Each student is provided with an individualised and tailored curriculum such that the practical skills they will engage with are those specifically chosen to meet their own developmental needs. By providing students with the tools to transform material, they transform themselves. This is so students learn to recognise their capabilities and positively contribute to society. Schools also provide opportunities to relate the curriculum to the wider world and work experience through social enterprise. Although each learner's curriculum is individualised, the integrated syllabus seeks to create solidarity through establishing community (local and heritage-based events, exhibitions and community orientated projects), social enterprise (cafes, shops, farms, vegetable-box schemes, charity and nature-based projects) and festivals (celebrating seasonality and diversity through world and local traditions, cultures and beliefs) to achieve healthy movement between self and other. The craft and land curriculum further encourages ethical resourcing of materials and encounters with local environments, traditions, cultures and practices, enabling community engagement in a very pragmatic and purposeful way. Although these practices require significant time and resources to establish, the principals could be applied on a smaller scale within mainstream curriculums.

Craft • Working from source materials through to purposeful crafted items provides holistic opportunities for learners to meet real life, world-based challenges, which in turn can provide therapeutic and educational opportunities within an integrated and true-to-life settings. In the craft sessions, students develop the ability to focus their attention, co-ordinate their movement and co-operate with others through the craft. By creating craft objects of the highest quality under the guidance of experienced master craftspeople, they create a new sense of their own potential and self-worth. Each school has a signature craft, for example: At Ruskin Mill in Nailsworth, the signature craft is textiles and weaving, carrying on the tradition of the woollen mills on the site; in the locality Glasshouse Stourbridge in the Midlands, the signature craft is hot glass and glass engraving - the students work in the footsteps of the master craftsmen who worked the furnaces before them; at Freeman in Sheffield, the students engage in the signature craft of silver and copper spoon forging and cutlery manufacturing carrying on the traditions of the Sheffield cutlery industry; Argent, in Birmingham, has jewellery making as its signature craft and students, like their peers at the nearby Birmingham City University – School of Jewellery, learn to make a range of rings, necklaces, and bracelets; and at Coleg Plas Dwbl, in Wales, the signature craft is greenwood work, building on the

traditions of Welsh chair making. These signature crafts form a backbone through the land and craft curriculum and help shape the other educational activities at the schools.

One of the most powerful and adoptable aspects of Ruskin Mills trust's PSTE methodology can found within its unique approach of using a Genius Loci audit to reveal a local holistic place-based curriculum, which inherently addresses and enhances sustainable development on a multitude of levels. The audit involves several steps and approaches that help identify, connect and build a unique holistic curriculum acknowledging and utilising the local resources, history and cultures. By synergising these elements, a dialogue between past, present and future can be formed to help guide schools, individuals and communities towards a shared sustainable vision of development of both 'self' and 'world'. Through this process students come to acknowledge the 'world' as a collaborator and educator and begin to put sustainability, ethics and ecological thinking at the forefront of their own curriculum design. Functionalising the findings of the Genius loci audit into a holistic practical curriculum through craft and land work encourage meaningful direct contact with the world (getting hands on with locally sourced materials). By establishing a 'seed to table' orientated curriculum though growing and locally sourcing materials and food (ideally biodynamically or organically produced) people are given the opportunity to form ethical and ecological relationships with the world. The students transform materials and food into purposeful, sustainable, and community-oriented items and meals, that offer meaningful encounters that promote self-generated ecological and sustainable thinking and innovation.

Institutional Practices • The schools have a strong connection to the garden and the land, providing outdoor space for pupils to learn and grow. The curriculum at each site is supplemented by a wide variety of enrichment and therapy sessions in both daytime and residential setting. Each student's programme of study is crafted to meet that student's specific educational needs. All activities support the student to work towards achieving his or her potential and future destination, whether that is work experience, independent living or further education. Activities offered at each site are particular to the cultural and geographical history of the location of the provision. The school grounds are managed following sustainable and ecological biodynamic principals, which aims to create holistic symbiotic cycles, to enhance not only the land, soil, food and materials, but also improve the surrounding biosphere and environments by harmonising and increasing the capacity for life and nature. By placing students within these environments, they witness the role modelling of sustainable practices and holistic cycles that benefit themselves, the ecology and the community through the production of sustainable and natural growing and animal rearing practices (organic, non-intensive, non-toxic). Through this process, meaningful relationships and values are fostered between humans, ecologies and communities, which allow the students to experience real life sustainability first-hand. Researching and sourcing sustainable locally sources (where possible) materials used within crafts and subjects, allows students to make informed moral decisions and choices around the scarcity and sustainability of local and planetary resources and the direct consequences to the world of such choices.

Staff and student in biodynamic school garden[69]

Challenges

- Any land-based initiative requires forward thinking and a sense of entrepreneurship as it is based on a non-standard approach
- There is a training requirement which requires practitioners to increase their self-reflexive process. The development of action research can be a guiding principal
- Practitioners need to approach the content with a collaborative attitude and teachers need to risk entering a domain of unfamiliarity to enter the practitioner mind set, however the rewards for teaching and practitioner-based learning are immense
- Requires external funding and grants (and large fund-raising team) which are mostly attained through its charity status
- Collaborating with the local community and various stake holders can be challenging, expensive and time consuming. This element takes a lot of considered coordination, but vital in both its implementation and impact

Strengths/prospects

- Harnessing and harmonising with the local ecology, cultures and history (via a Genius loci audit) can help reveal and acknowledge both negative and positive practices and approaches to help create a more sustainable and community orientated curriculum that meets the needs of both the people and earth
- A holistic practical focused curriculum involving land, craft work and nutrition, using sustainably sourced and local materials where possible, encourages situated and embodied learning for the whole human being and community
- Creating sustainable 'seed to table' systems for food and material production that involves learners (using Biodynamic/whole system principals) encourages sustainable, ecological and environmental practices and thinking
- The will and support for a holistic integrated approach as it is essential to the schools and not-for-profit charity vision

For example, using a sustainably sourced locally cut tree, instead of a rare hardwood transported from the Amazon rainforest.

Community Connections • Ruskin Mills Trust's core purposes is to aid integration into community and contribute to society. The focus towards community is paramount within the trusts PSTE methodology as it creates a pull (as opposed to push) for the students to gently self-generate their own desire to engage with community, society and world. Multiple opportunities for students to engage and develop both the local communities and wider society are experienced; farms/land (contributing produce to local communities via veg boxes and shops), cafes (using the grown produce from the land/farms), shops (selling and showcasing Trust grown and locally made, sustainably sourced produce) and exhibition spaces (where established artists, crafts people and student can exhibit and showcase their work alongside and for the local communities). Further to this, students are encouraged to lead community and charity orientated projects such as restoration of community/heritage spaces (canals, buildings, mills, greenspaces etc) which can help engender a sense of belonging, giving back and community building, while aiding integration into community and society in a meaningful and purposeful way.

Capacity Building • Training and development opportunities for all staff and wider community is provided by the trust, from induction to a newly accredited master's level course. CPD Courses in all 7 of its fields of practice (with many open to the public) are also offered emphasising 'practice enhanced research, research enhanced practice'. These courses and other resources available to the students and staff also encouraging renewal and development in the Ruskin Mill Trust methodology and practices to ensure they meet emerging educational, social and environmental needs. Doctoral and post-doctoral research at various Universities along with other external research project - such as ERASMUS partnerships – serve to enhance our evidence-based methodology. The charitable objectives support the dissemination of all research findings widely and it achieves this in various forms, including 'The Field Centre Journal of Research and Practice'.

The alternative pedagogy and learning processes these school examples have presented interconnect all aspects of a WSA. They also illustrate how the craft process and creative based learning can reveal and meet both societies' challenges and potentials through an active dialogue between individual and world. In turn, this opens the possibility of the world becoming our teacher. The capacities developed through craftwork, such as autonomy, agency, innovation, self-reflection and a sense of morality and ethics[70] are now more important than ever in helping to develop meaning and purpose in light of today's sustainability challenges: On an individual and local scale, and equally crucial in reconnecting us to the world, and stimulating innovation and solutions to address the new imperative within education of contributing towards sustainability, ecological thinking and environmental renewal.

ADDITIONAL UK CRITICAL CASE STUDY IN ONLINE EDITION

India • Quality Education' as an enabler for the SDG's

Special thanks to The Centre for Environment Education, Eco-Schools Programme India, Khushbu Shah, Mansi Shah, Swarnima Luthra, Padma Jyothi Turaga, Renuka Rawat, Chetna Bhardwaj, and B. Rakesh for this contribution

National Policy of Education (NPE) 1986 (modified in 1992), in which "Protection of the Environment" is stated as a common core around which a National Curriculum Framework (NCF) would be woven.

In India, environmental education is mandated by the Supreme Court of India and overseen by the National Council of Education Research and Training (NCERT). The National Curriculum Framework, developed by NCERT, includes a "Protection of the Environment" component comprising of a graded syllabus for EE for class 1 to 12 standards. At secondary school level, an infusion model has been adopted for imparting EE, which means environmental education is now imparted in most schools and colleges in India. At present, at the national and sub-national level, the government has adopted the SDGs as a guiding framework to steer development actions. NITI Aayog[71], a governmental portal in India, plays a central role in the country's SDG efforts. "Schools accredited by India's Central Board of Secondary Education (CBSE)[72] are now in compliance to new Education Policy 2020 which has proposed the revision and revamping of all aspects of the education structure to align it with SDG 4 Quality Education and the aspirational goals of 21st Century education" (Swarnima Luthra, headteacher). Both schools featured in this example states that the changes support ESD being further integrated into the curriculum. "This has aided the school to integrate this into the pedagogical approaches. The school has also received State level recognition for the sustainability programs done by our students" (Padma Jyothi Turaga, head teacher). Most schools in India are funded and run by the government. However, the public education system faces serious challenges including a lack of adequate infrastructure, insufficient funding, a shortage of staff and scarce facilities. Since many government schools do not provide adequate education, Indian parents aspire to send their children to a private school. Some expats choose to send their children to private Indian schools. "The Centre for Environment Education (CEE) works with local, state, national and international agencies, organisations and governments in India and in various other countries to help create a sustainable future"[73]. Both schools are private schools that are run by their own management. The following contribution that captures one schools' journey with a WSA is from the school headteacher. For the second example please refer to the online edition.

Contribution by head teacher Swarnima Luthra and eco-club coordinator Renuka Rawat: *Adarsh Shiksha Niketan* (ASN) Upper Secondary School, Dehli (established in 1975)

The ASN school vision is to have an intellectually possessed an amiable society, spreading the light of education all

1) ASN schools vertical gardens - making every space count and breathe! 2) Yoga sessions conducted on regular basis ensured students practice self-care, physical fitness, developing a healthy mind in a healthy body. Mediation, breathing exercises and prayer are an integral part of the daily routine for all the learners

Key WSA Principles in action at ***ASN upper-secondary school***

Vision, Ethos, Leadership & Coordination

- School vision directly linked to sustainability core values
- Top-down accountability and support from both the national curriculum and school leaders
- International collaborations also strengthen the schools vision and keep the way they lead and coordinate current

Curriculum

- SDGs actively incorporated into the curriculum
- Alternative forms of assessment 'for the leaning and not of the learning' – ppt, article writing, role play (alternatives to exams)
- Global citizenship and social entrepreneurship incorporated into teaching

Institutional Practices

- Eco-friendly campus: numerous sustainability-oriented school practices in place; rainwater harvesting, solar panels, school garden, vertical garden, bio-gas plant, composting
- Signs throughout the school to promote and nudge responsible environmental behaviour
- Ongoing waste management campaign involving community and other schools
- Best practices for the school are based on multiple approaches of the SDG's.

Pedagogy & Learning

- Integrated project-based learning is central to ESD
- School grounds and gardens as a classroom

Interdisciplinary teaching focus

Community Connections

- Strong community outreach programs that involved all community stakeholders
- Mentor and exchange workshops set up with other schools and community members
- Involved in government organised events connected to sustainability, good health and wellbeing
- Joint sustainability campaigns (for example waste management) with other schools and community members
- Awareness raising beyond the school is a major focus at this school

Capacity building

- Continuous professional development of all staff is prioritised including regular capacity building workshop
- School's capacity made stronger by being part of the International Eco-School network, both local, national and international partnerships like CEE

over the World, moulding every individual environmentally conscious, socially endowed, making the planet 'Earth' worthy for living. The mission is to create an awareness to evolve environmentally and socially the pristine World through well devised curriculum, excellent infrastructure, innovative teaching learning practices with an entrepreneurial dimension. Our school, since its inception, upholds its core values - **social responsibility, cultural consciousness, global citizenship and environmental consciousness** which support the vision, shape the school culture and is well reflected in the teaching, ethical conduct of our learners and even in our infrastructure. The school's vision, mission, core values and whole school engagement are aligned to achieve sustainable mindsets through positive change in behaviour and actions in all the stakeholders. After the launch of UNSDGs in 2015, we realised the potential in the SDG framework as a learning tool for our students. Therefore, we redesigned and revamped our educational goals in alignment with UNSDGs. Principal Luthra believes that 17 UN Sustainable Development goals can serve the purpose of both the educational themes and learning tools for making education relevant and in context with real life.

Extensive discussions, brainstorming and meetings amongst the head teacher and teachers are carried out regularly for the planning and (re)designing of the school's pedagogical plan to create a multi-faceted curriculum which integrates real life lessons into the classrooms through curriculum linkages and connections. By imparting sustainability-oriented education effectively through school culture and practices, the school has endeavoured to align the integral drivers - curriculum, pedagogy, and whole school engagement. This has transformed the school's learning environment into the hub of research and action on SDGs where every student at the school has understood global goals, how they impact their lives and what they can do every day to help their country achieve these goals. The assessment is focused on 'for the learning and not of the learning'. Different types of formative assessments like – Quiz, role play, PPT presentation, recitations, article writing, performing art and art activities are carried out at all class levels.

We believe the following suggestions can help realise the objective of facilitating quality education to all: **1.** A school with *good infrastructure* goes a long way in improving the interest of both students and teachers alike. It plays a

role in improving the attendance of students too. For this same reason, it can be said that investments in school infrastructure play an enabling role in solving many access-related problems of students to the school system, thereby improving their academic performance too. **2.** Some *flexibility and responsiveness* in the curriculum is needed to allow for adjustments and modifications considering changing and new circumstances or priorities. Sometimes such adjustments can be minor in that they do not affect the curriculum structure; sometimes they require a form of modernisation to ensure that the curriculum remains current and relevant, reflects new developments in society and adequately prepares learners for life; and sometimes they call for innovation that brings new approaches and solution; and large scale, system-wide reform that entirely reshapes the existing curriculum. **3.** It's necessary to seek *policy change* in schools or school systems to enhance or protect the educational benefits to students, the physical and psychological health and safety of students and school staff, or the management and integrity of the system. **4.** *Changes in pedagogy* are reflected in experimentation with active and collaborative forms of teaching and learning tied to community-based public problem solving. New community-based, engaged pedagogies—most prominently service-learning—connect structured student activities in communities with academic study. **5.** *Changes in curriculum,* in educational content, in expectations for students, in teaching methods, in class size, in teacher independence – all these and many other factors can lead to a better educational experience for students.

Our WSA, SDG 4 Quality education whole school approach report[74] goes into more details, however, our eco-friendly campus and integrated project based learning are what we feel best showcase the holistic approaches to suitability orientated education at our school. The integrated project-based learning is a part and parcel of our teaching strategy, action research projects, the *in-situ* school practices (Annual Green Drive, Health and Hygiene drives, awareness programs like Special assemblies, Celebration of Earth Day, Tiger Day, Observing Earth Hour, Audits on land, water, energy & air etc.). Revamping Curriculum & Pedagogy (for example – designing lesson plans, adopting integrated project-based approach, creating inquiry-based classrooms, designing hands-on activities, stimulating and creative worksheets) with the clear objective of imparting sustainability education, is the foundational starting point which comes at no extra cost. It only requires effective engagement of teaching faculty and principal to its best of their abilities. Practices like observing earth hour, check on water and electricity consumption patterns and wastage, intra school cultural and literary activities, and class wise assemblies on pertinent social and environment issues are also beneficial with no cost implication. The following measures with little investment have proved to be beneficial directly or indirectly in the impart of sustainability education; installing eco-friendly measures like solar panels, rainwater harvesting systems (under subsidised promotional projects from government); installing senser taps, half flush options, sprinkler system for optimum use of water; creating and maintaining herbal garden and green spaces in the school campus, constructing compost pits and leaf composts; holding theme-based exhibitions on students work; and organising awareness programs within and outside school like tree plantation, inter school competition etc. Certain measures which the school has taken up at substantial costs are incorporating Continuous Professional Development Programs (CPD) and Capacity Building Workshops through experts in the field of education; collaborations with international and national organisations; organising cultural exchange programs, inter school meets and events; adopting latest edu-tech solutions like installing View Sonic Interactive Panels.

Strengths/Prospects ***(from both schools)***

- New curriculum/education policy integrates ESD
- SDG's play a major role in supporting the sustainability education
- Sustainability-oriented projects motivate students and encourage a positive attitude towards sustainability
- It takes complete commitment to deliver WSA sustainable-oriented education from all staff. Dedicated teachers have worked very hard to develop curriculum linkages and connections for a holistic approach to be possible
- Successful collaborations with national and international organisations to provide an interactive and dynamic platform to the learners and the necessary expertise

Challenges ***(from both schools)***

- Motivation of community
- Budget restraints
- Bringing a change in mindsets and societal behaviours and attitudes is a long-term undertaking to bring on board students, parents and teachers together to work towards adopting sustainable habits and actions was a challenging task
- Pandemic and shift to online learning limited some of our whole school environment action projects and hindered community initiatives, but few projects like litter less campaign, biodiversity, social-emotional connect seamlessly integrated and modified for the online learning were a great success

★ ADDITIONAL INDIAN CRITICAL CASE STUDY IN THE ONLINE EDITION

Norway • Montessori Students as changemakers

Special thanks to Cecilie Fosseidbråten, Henning Johannessen and Montessori Norway for this contribution

All Montessori schools and kindergartens in Norway are private, which in Norway means independent, in the sense that these schools are privately owned and have more freedom to choose an alternative pedagogy and method. However, private does not mean elite as all private schools and kindergartens are strictly regulated, not-for-profit, and receive between 85-100 percent state funding. Unique to Norway is their National Montessori Curriculum organised by the national interest organisation Montessori Norway. This national Montessori curriculum is approved by the Norwegian directorate of Education (UDIR) and regulated through the Independent Schools Act[75]. In line with Norway's national curriculum renewal, the Montessori curriculum renewal also took place in 2020 and is an example of a curriculum that supports a holistic integrated approach to sustainability-oriented education.

Maria Montessori's main focus was to assist children and adolescents in creating a more sustainable, fairer and more peaceful world. This became the driving force for her work with children and education and is central to the pedagogy even today. Consequently, Montessori pedagogy is often referred to as "peace education". The values in Montessori pedagogy are intricately linked to and in line with, human rights and the UN's Sustainable Development Goals. (Montessori curriculum 2020).

Front cover Montessori Læreplan 2020 - illustration Marianne Karlsen

As of August 2021, 91 Montessori schools, 40 Montessori kindergartens and 10 associations are members of Montessori Norway. 32 of the Montessori schools have junior high schools. Norwegian Montessori schools (and all independent schools in Norway) receive 85 % state funding and thereby are accessible to most families. As well as the national curriculum aligning with a WSA, Montessori Norway have through their Montessori 2030 strategy. made a commitment to achieve two aims in alignment with the SDG 2030 agenda: 1. To help our students become the change-makers the world needs today and in the future 2. To make sure we as institutions are part of the solution in all we do"[76].

Excerpt from Montessori Norway 2030 strategy:
"The Institutions as part of the solution: Our schools are institutions. These institutions purchase products and services. In these roles, we can take an active part. We can make sure we know the origins of the products services we purchase – all through the value chain. […] Do we ensure that our staff and student body include a diversity of ethnicity, gender, social background etc? Do we help the little girls and boys avoid gender stereotypes? Do we help the families understand how they can be part of the solution? Are we as carbon neutral as we possibly can? Are we using a financial service that is not involved in any financing of war, climate-challenging investments? Are we using our power to improve our own and our constituents´ SDG friendly behaviour? These are just a few of the questions we will ask and find answers and solutions to together".[77]

One example of this 'Montessori' approach in action comes from a cluster of schools situated in a semi-rural town called Drøbak, in southeast Norway. In 2016, Drøbak Montessori schools (a kindergarten, primary and lower-secondary), created and committed to their own 2030 strategy: "Children who start in kindergarten today will graduate Drøbak Montessori secondary school in 2030. What demands and challenges are placed on young people then cannot be fully anticipated. Nevertheless,

it is our responsibility to give them the best possible skills/conditions for when they meet the challenges and demands that will be placed on them when they advance into higher education, and / or enter the labour market. Our kindergartens and schools are part of the local community. We must have a clear role and voice in the community, to be an example, and an inspiration. The local community must know our goals and how we work to reach them. Everyone who is associated with Drøbak Montessori must agree to our vision and our goals and do their best to help live up to this." (Mervi Flugsrud, manager of Drøbak Montessori) The school strategy was part of the inspiration behind Montessori Norway's national agenda and is an example of how individual schools can support change on a national level. Ingrid Stange, founder of Drøbak Montessori, has spearheaded this national 'Montessori Norway' commitment to the SDGs through her role as the chairman of the Montessori Norway board and is also committed to inspiring schools around the world to do the same[78].

According to the heads of school, another 'top-down' influence, offering the authenticity and assurance needed to live-up to this commitment to the SDGs, is that all teachers have this focus included in their contract. For example, in the teacher contract for the primary school it states all teachers are required to use the school garden and outdoor classroom in their teaching. Moreover, at board meetings, each school is required to give progress reports in connection to their yearly plan concerning the 2030 agenda, and within this ESD. While teacher autonomy is respected in these schools (historically teacher autonomy in Norway is very strong), this top-down requirement, that goes beyond the commitments upheld by following a national curriculum, helps support a whole school/staff commitment to a common goal. However, it is important to note that there needs to be flexibility and the ability for each teacher to find their own way. Cecilie Fosseidbråten, the primary schools head teacher describes this also in terms of student participation: "As with our students, some teachers are more interested in working outside than

Key WSA Principles in action at ***Drøbak Montessori secondary school***

Capacity building

- Teachers are encouraged to follow their interests and go on different types of training course, such as, bee keeping courses – both students and teachers have attended this
- The Human Resource Development and staff hiring strategies consciously looks for people who are attuned to the school's philosophy and the SDGs

Vision, Ethos, Leadership & Coordination

- The school vision is to assist the adolescents to develop a strong sense of self-worth, identity and a clear understanding of their meaningful role in society at large. To prepare the students for adult life, to be able to feel a strong sense of independence both socially and economically
- Elements of the school are non-hierarchical, especially in the classroom, the aim is to work side by side with the student
- All the teachers and school leaders eat, play sports and free-time games with the students, there is no separate 'teachers lounge'

Pedagogy & Learning

- Micro economies are set up and managed by students. Using circularity and creating a student and teacher-led micro economy as an approach to teaching sustainability
- Student-led learning is promoted, for example through the in-depth projects where the students get to learn about whatever they want for 6 week periods at a time

Curriculum

- The school has the freedom to develop its own localized curriculum which is supported by the wider Montessori school network (nationally and internationally)

Institutional Practices

- The school building makes 'walking the talk' a natural part of everyday life as it is a 'Powerhouse' building. Meaning that during 60years of use the building (including construction) will produce more energy than it has used
- Students make money giving guided tours to visitors of the school showcasing the sustainability features inside and out
- Students directly contribute to the running of the school, they maintain the school ground, cook and clean.
- Students are part of school decision making - democratic decision making in action

Community Connections

- Citizenship science in our surrounding community such as working with local charities on water quality issues, also beach and nature clean-ups initiated by students
- Students take part each year in Montessori Model United Nations connects to the international community
- UN-school Norway – National community connections

School gardening teacher training course, NMBU

others and we really try to follow the students and teachers lead with this. While we require all teachers to interact and utilise the school garden, each teacher is given the flexibility to find their own approach. We want to find the balance between top-down support and bottom-up initiatives taking the lead."

Other top-down support includes Montessori Norway providing administrative support for teacher training course related to numerous aspects embedded a WSA ESD. For example, Montessori teachers have been offered to take part in a 2-year long education in School-gardening, a course provided by the university NMBU[79]. Having this top-down support is further strengthening this as a resource for all teachers. It means more teachers, not just the ones already fully engaged, are receiving valuable high-quality training.

The schools also have close cooperation with various other national and international organisations such as United Nation Norway[80] (FN sambandet), as they are a UN-school. Through this initiative, teachers regularly join seminars and have access to other recourses. Practical examples of a 'WSA in action' is now presented by Drøbak primary and secondary school head teachers.

Contribution by Henning Johannessen, head teacher of Drøbak Montessori secondary school: 75 students grades 7-10th (12-16 years of age)

The Secondary Schools vision[81] is grounded upon 5 principles 1. Freedom, 2. Individualisation, 3. Independence, 4. Cooperation, 5. Harmony with Nature. We have always (18 years) worked with sustainability-oriented education, but we intensified the focus in 2015 when the new SD goals were revealed. Our school website goes into more details about our pedagogical approach and everyday life at the school, and our involvement in national and international projects, such as Montessori Model United Nations[82].

In our school we are really stressing the importance for students to be involved in their own learning experience/ process. We have a council meeting every week, where the students lead in front of other students, teachers and the principal. All the students have responsibilities for daily tasks such as cleaning, making warm lunches, feeding the hens, doing the hives etc. This approach was also taken when we built our new school building, Norway's first **powerhouse school** "Architects from Snøhetta designed the new school, while Skanska has been responsible for the construction. The school is a powerhouse, a building that during sixty years of use will produce more energy than it has used. The calculation includes the entire process, from material production, transport and construction to operation and finally disposal"[83]. You can read more about the Powerhouse building process on the school website. Student participation has been a focus here also, even in designing the building as Mervi Flugsrud, manager of Drøbak Montessori explains: "We had a workshop where we divided into groups, worked out suggestions, went back together and presented different solutions to each other. Then there was a student who asked: "Can we not just put the school here, towards the forest?" And that is the proposal we went for. One should not shy away from having people with different skills and ages in such projects. Just like in a Montessori classroom, we benefited from both age mixing and interdisciplinarity."

Another example of student driven education is when we had all the students and teachers focusing on and cleaning up the small pond we have in our neighbourhood. We spent 3 weeks doing this, and we went all in. The result is a really nice pond, bird boxes, the stream of water is cleaner etc.

Being a small school with limited resource, we have taken it one step at a time. For example, three years ago we started beekeeping, this took time to establish with both teachers and students being trained in how to do this responsible work. This is a classic example of what we like to focus on. It is a good thing for our local environment, and it gives us money into our microeconomy. We feed the result into our daily operations. In terms of challenges, being a small school, we are always vulnerable when for example a teacher leaves or gets sick for a period of time. We have 9 teachers, all specialists in different areas, and it is not easy to substitute this on a short notice. It is also important to have long term plans for the school concerning continuing education for the teachers, and we need to have a plan for the next 4 years describing all the things we are going to do. **It is vital to make sure we have a security net when things fail, and to be prepared**, to be dynamic and creative. For example, 4 years ago, the cod in the Fjord disappeared gradually. We have a small boat we go fishing in, but now we had to look for other sustainable resources in the sea. We focused on seaweed. Now we collect seaweed and use it for food, soap etc.

Contribution by Cecilie Fosseidbråten, head teacher of Drøbak Montessori primary school: 80 students, 1- 6th grade (age 6-11)

I feel the successes we have had are because of ESD naturally aligning with the Montessori pedagogy. At the primary school this is best seen in the cosmic education curriculum[84]. Another crucial factor is that all levels of management have been behind this from the start. Sustainability values have existed in our schools and curriculum since the school started in 1995. However, our focus on ESD really increased when our school garden and outdoor classroom was established in 2011 when a teacher committed to Environmental Education was employed. She coordinated numerous environmental education initiative at the school. One of our main focuses is that anything we start should be student led from the beginning and involve the students at every stage. This often means changes are slow, take time and often fail, but this is where we believe the real learning and culture of sustainability is fostered. In terms of challenges, figuring out how to collaborate with external actors has sometimes left us feeling overwhelmed. For example, Eco-Schools[85] and The Natural School Bag[86] are two initiatives that offer schools support with ESD. Although we are very thankful for their support, the reporting and assessment required for these types of awards/initiatives can feel at odds with the way our school works. It is often difficult to capture all the different interdisciplinary and everyday sustainability actions going on in our school. We hope to find easier and more streamlined ways to monitor and assess our schools progress with all we are doing, as well as finding a way to be involved with external actors that is mutually supportive, and do not add to an already full administrative workload. We also feel that when embracing a WSA, it is essential to create opportunities for all students to be empowered in a role of responsibility. Establishing a school eco-committee supports this, as it creates more opportunity for active participation. It also holds us accountable to commit to continual improvements. While we have a sustainable focus at the schools, we are far from being fully sustainable. Our student committee also offers opportunities for active participation and peer to peer learning. The challenge though is for this not to be available to the 'few', but to create opportunities for all students to experience responsibility - and through this empowerment. The school garden can provide numerous ways to engage with sustainability. Some of what we have set up has cost very little, such as establishing bokashi composting and things we have managed to get donated to the school, like our greenhouse, while other aspects have been more expensive to set up like our outdoor kitchen and pizza oven. Students being able to follow food from 'seed to table' however continues to be an integral part of ESD at our schools. The questions that come from this are endless! The school ground also offers different ways for students to get involved, as over the years it has become clear not all students want to grow food. Different activities motivate different types of students. Most recently a ground of

Key WSA Principles in action at ***Drøbak Montessori primary school***

Capacity building

- Multiple Continued Professional Development courses attended connected to being a UN School, green flag EcoSchool and with project funded by DNS – The Natural School-bag
- Montessori Norway are also supporting and promoting schools to take part in professional development courses, for example the school gardening courses
- A sustainability-education coordinator in a 60% position was employed from 2011-2019 which supported 'in-house' capacity building

Vision, Ethos, Leadership & Coordination

- Strong top-down vision that directly addresses their commitment to the SDG's 2030 agenda. Everyone who is associated with the school must agree to our vision and our goals and will do its best to help live up to this
- Committed teachers that have officially agreed in their contract to support the schools ESD focus and teach lessons in the outdoor classroom

Curriculum

- A holistic and integrated approach to sustainability-oriented education is embedded in the Montessori national curriculum

Pedagogy & Learning

- Interdisciplinary teaching is a core part of the Montessori pedagogical approach
- Student led learning
- Peer to peer learning
- Garden as classroom

Institutional Practices

- Outdoor classroom and garden established in 2011
- Eco-School committee and student council work together continually to support the whole school to become more sustainable

Community Connections

- Nature and local town as our classroom, 'uteskole' takes place every week where the students visit the local beach or forest all year round.
- Students are proactive in writing letters to motivate changes in our local municipality – more recycling bins, reporting damage for example

Students hard at work in the primary school garden and outdoor classroom

young boys built a willow walkway in the school grounds and this year will teach their fellow students to build another. This is another example of the domino effect, peer to peer learning and the student becoming the teacher. We are also witnessing this in eco-committee as they become empowered to talk about what they are learning and discussing with the rest of their class. This really helps to build a sustainability minded school culture that is motivated, instead of overwhelmed, by the sustainability challenges our world faces. One area we feel we could do better at is being active and form more connections in our local community. We hope we can do this by supporting other schools (more peer-peer teaching) to set up eco-committees for example. We also have plans to involve more parents and local businesses. However, this needs to be done in a way that is manageable and slowly enough for us to learn from the process, including our failures and all our staff and students are involved.

Strengths/Prospects ***(from both schools)***

- Long-term commitment to sustainability-oriented education
- Top-down support from all levels of managements
- Long-term core staff members (both the head and deputy head of the school have worked at the school since it opened 18years ago)
- CPD courses – educating the whole school not just a few teachers.
- Support on all levels – school board, Montessori foundation, school principles
- All teachers and leaders have ESD/2030 strategies are required in their contract –
- Legal requirement – in work requirements in the contracts – including a requirements to use the outdoor classroom and garden in their teaching (outdoor classroom was a saviour in COVID!)
- Real-life responsibilities given to students.
- Garden/outdoor classroom helped to motivate us to do more -

Challenges ***(from both schools)***

- A small school with only 9 teachers, all specialists in different areas, it is not easy to substitute this on a short notice.
- Things fail, not all of the changes made succeed so there needs to be back up plans and a culture which responds positively to failure.
- Student led projects take more time and often fail BUT it is worth it! Students
- Not all students like everything (for example being in the school garden), there needs to be different task to suit and empower each individual child.
- To teach like this ideally needs small groups and a higher staff/teacher ratio

China • Hong Kong: A Whole School Sustainability Audit spearheading a whole school commitment to change

Special thanks to Sean Lynch, Victoria Astle, Sasha Manu, Anthony Dixon and Caitlin Shem for this contribution

China, and Hong Kong S.A.R in particular, place a high priority on sustainable development and pursue a range of governmental, corporate, education and civil society initiatives. The Hong Kong Education Bureau[87] and the Hong Kong Environment Bureau[88] offer site visits, teacher education programmes, territory-wide green activities, and learning and teaching resources. The Environmental Protection Department[89] also helps local institutions to minimise waste and reduce carbon, among other green initiatives. There are also numerous NGOs working on sustainability in Hong Kong.

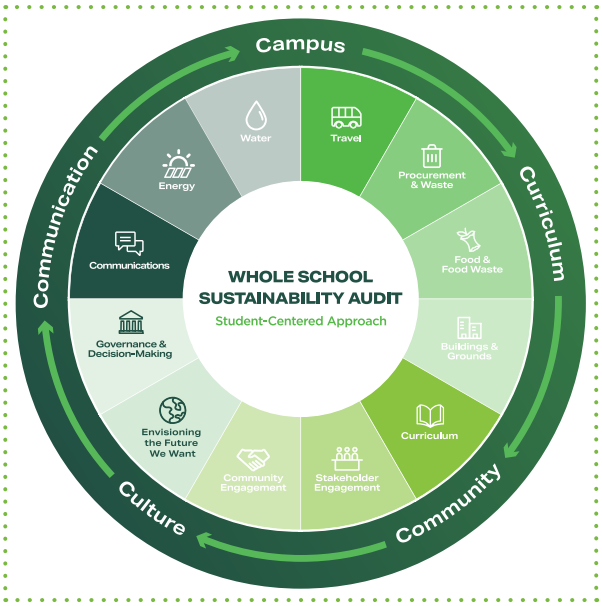
This case study is of the Chinese International School, an independent private non-profit school in Hong Kong. The school has had a focus on sustainability for many years, with student-led initiatives dating back over the last decade. In 2019 the school decided to take a more systematic, comprehensive and strategic whole-school approach to sustainability and sustainability-oriented education.

As the first major step in that direction, Metanoia[90] (a sustainability consultancy specialising in schools) were engaged to work with students and the school to conduct a whole-school sustainability audit. Metanoia's expertise is broad and includes energy efficiency (of lighting, air-conditioning, buildings), building-integrated solar energy - design and installation, food and food waste, sustainable school uniforms, sustainability communication, biodiesel-from-waste, carbon auditing, offsetting, education for sustainability, and governance for sustainability.

Anthony Dixon, Metanoia's founder explains: "Metanoia is a Greek word meaning 'a transformation of heart and mind leading to a change in behaviour.' It describes what happens when students are effectively engaged in the rich sustainability learning opportunities their school campuses offer. We believe this kind of educational experience is essential for a sustainable future." Metanoia's free online School Sustainability Assessment Tool[91] which schools can complete easily in a few minutes, encapsulates their view of what it means to be a sustainable school community using the 5Cs shown in the audit illustration (see right).

The Chinese International School (CIS) is a non-profit independent school located in Hong Kong, with approximately 1,500 students from Reception to Year 13. All students study Chinese from reception through to graduation, while completing the International Baccalaureate (IB) Middle Years Program (MYP) and the IB Diploma Program (DP). There are over 450 staff at the school including leadership, administration, teachers, teaching assistants, and operational staff.

The Chinese International School's example offers insight into what can be achieved with strong vision and leadership. Moreover, it shows that collaborations with external actors, can support a school in their journey to become sustainable. While some of what this school has done has required a significant financial commitment, their story also provides us with numerous examples of low-cost entry points and ideas for utilising a whole-school approach as a framework for sustainability-oriented education and the development of a sustainable school community.



Metanoia's Whole School Sustainability Audit

This contribution is by the Chinese International School[92] (CIS) Head of School, Sean Lynch, and the school's sustainability coordinators - Victoria Astle and Sasha Manu (both of whom are also full-time teachers):

Student groups have launched and championed environmental change within our school and local communities for many years. One of these groups is called 'Drop in the Ocean (DITO)', was founded over 10 years ago. This student group concentrates on environmental issues, aiming to advance sustainability at CIS and in Hong Kong. The Primary School has also started a 'Green Team' which engages our youngest students through different projects. Many individual student-led initiatives also happen throughout CIS; students have been and remain our most impactful agents of progress. In 2019, CIS sought external expertise through environmental consultancy Metanoia to support and compliment our efforts and work with our students, as well as our staff, parents and alumni, to undertake a comprehensive Whole School Sustainability Audit. This was a major project which we completed over the course of 2019-20. The findings and recommendations from that far-seeing process are the basis on which CIS has since continued to structure its approach towards sustainability education and action.

In 2020 CIS's Sustainability Council (SCO) was created. The SCO is a consultative body with broad stakeholder representation that supports the CIS Head of School (HOS) and Leadership Team (LT) in their direction and oversight of our school's sustainability commitments. The SCO is made up of 23 members including 9 students from all areas of the school - secondary and primary. The SCO offers formal recommendations to the LT and serves as a sounding board for all matters related to sustainability including recommending short-, medium-, and long-term targets for carbon reduction, waste reduction, green operations, and eco-literacy. This year, it has also launched a thorough review of our curriculum, from Reception through Year 13, with a view to further deepening the ways in which we educate for sustainability. We have just developed a new strategic framework for the decade that lies ahead which places sustainability at its core, beginning with the embedding of environmental stewardship into our new

Key WSA Principles in action at ***Chinese International School***

Vision, Ethos, Leadership & Coordination

- Top-down support – fully invested in supporting sustainability projects
- Investment (both time and money) into creating a sustainability audit as an intentional first step towards whole-school engagement
- Commitment to address unsustainable practices
- Students involved in sustainability measures and the sustainability vision of the school
- Paid positions for sustainability coordinators

Institutional Practices

- Student involvement in solar BIPV design
- Sustainability procurement and waste policies in place created by bottom-up participatory process involving all stakeholders in the school
- School farm, producing food for school and local food bank. Farm also engages parents and other local community members

Community Connections

- Parent-teacher sustainability representatives support ongoing community-school connections
- Student-led 'urban farmers' initiative donates produce to local food bank
- School hosts community events such as REDRESS to promote sustainable fashion
- Public space clean-ups - for example on local nature paths, beaches, and in the ocean on kayaks

Capacity building

- Workshops organised for staff and students with local sustainability-oriented Charities and NGO's
- Professional development courses and meetings to increase knowledge in sustainability, for example - a solar energy design course and a course on carbon literacy and decarbonisation run by Metanoia.
- Annual student-led school sustainability summits and a whole school Green Week where all staff and students get involved

Curriculum

- Curriculum mapping underway with a view to proactive integration of sustainability in a whole-school scope and sequence

Pedagogy & Learning

- New strategic focus on project-based learning; viewed as ideal context for developing interdisciplinary, real-world, community-based sustainability initiatives
- Experiential learning through multi-day experiences is deeply transformative
- More work is needed to develop sustainability-oriented pedagogy competencies; once a common framework for this is established teacher professional development will be a focus

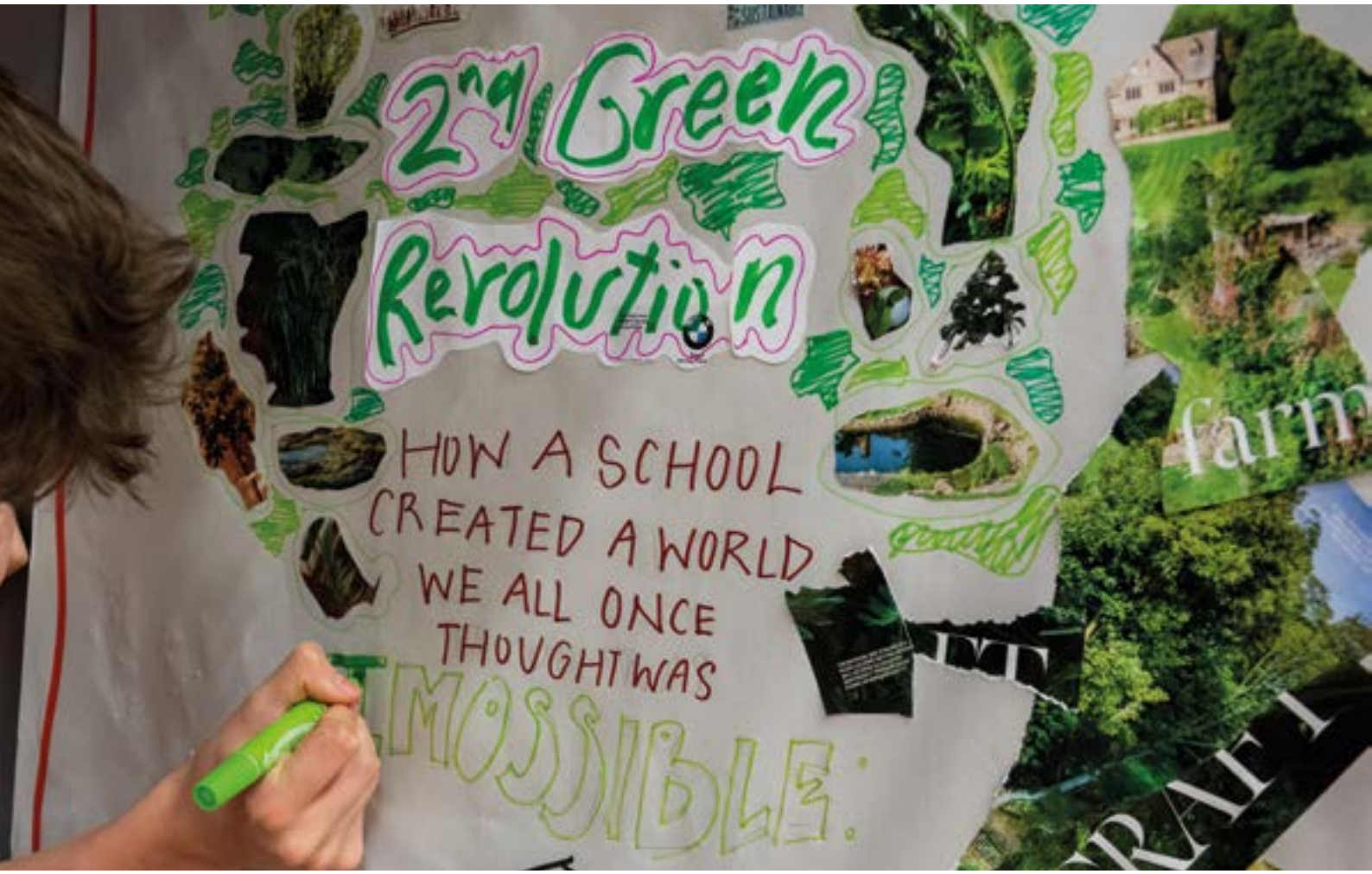
Mission Statement and first-ever whole-school Values Charter. One of our strategic goals as part of this "Vision '33" is a sustainability pledge to become zero carbon and zero waste.

Participation has dramatically increased over the past three years. Previously, sustainability efforts were predominantly student-driven (by a relatively small group of students); now, more students are involved, including primary school students, and with prioritisation from the leadership team, more staff have also become involved and invested in the school's sustainable future.

Vision, Ethos, Leadership and Coordination • It has been a significant but highly beneficial 'environmental investment' to engage with outside expertise (Metanoia). It enabled CIS to undertake a full sustainability audit of the whole school, while also empowering students to help in leading that work, in keeping with our focus on student agency. Six main themes emerged from the interviews with stakeholders conducted as part of the audit: The importance of student leadership; the need for a whole school sustainability strategy; connection to nature; how to catalyse behaviour change; sustainability in the curriculum; and greater collaboration on sustainability between primary and secondary schools. Our ongoing partnership with Metanoia has provided decisive support on this pathbreaking trajectory. Working with Metanoia, our students are taking charge of ongoing data collection, working to provide benchmarking that can be supported by Key Performance Indicators (KPIs), and driving behavioural change. Decarbonisation and sustainability education are thus becoming more and more of a reality for our community.

Capacity Building • One of the recommendations from the Whole School Sustainability Audit was to create a **multi-stakeholder Sustainability Council (SCO)**. In 2020-21, the Sustainability Council worked on creating focused procurement policies for the school, which were put into practice at the start of this academic year 2021-22. The focus of the SCO this year has continued to be to implement the 100+ recommendations from the Sustainability Audit.

CIS students envisioning the sustainable future



CIS students speaking at the launch of the school's whole school sustainability audit in September 2019

Other low-cost measures included setting up student groups across the whole school. These have had a tremendous impact by engaging and harnessing interested students to make a difference to their school and local community. Having some staff volunteer to help some of the logistics of these groups, especially in Primary, is also key to its success.

Institutional Practices • Our school has engaged in numerous local partnerships with different environmental NGOs, such as: Encompass HK which have helped students to organise CIS community ecotours; Redress, a textile and fashion NGO; Ecodrive, to help community recycling efforts; Plastic Free Seas to engage students in responsible disposal and consumer choices; and St Barnabas Shelter and Home where students donate crops they have grown on our school farm.

The **CIS farm** is run by the school with help from our parent community. However, this year, our Urban Farming strand of DITO has taken the reins. When we have in-person campus learning, these students meet at the garden once a week to plant crops, harvest, weed and water. We have engaged local farmers for their expertise working with the students regarding which crops are best to plant depending on the season. We are also lucky to have community and parent volunteers, which is greatly appreciated when the school campus is closed to students.

The farm has benefits for the whole school community. Parent representatives hold monthly family workshops. Primary students grow plants in the garden, create artwork and make science observations of plants and wildlife. Some of our older primary students were recently given a 'Live from the farm' virtual tour by some of the secondary 'urban farming' students. Outdoor education has many benefits, especially for students who live in a very urban environment like Hong Kong.

Pedagogy and Learning • Project Based Learning (PBL) is new in the Secondary School but in the school's new strategic plan it will be expanded, not only throughout Secondary but also starting from the earliest years. The primary school is currently embarking on its own journey of staff training and creating pilot PBL projects. These PBL projects will dovetail with our focus on developing education for sustainability. This emphasis is something that the school is looking to develop with staff training and dedicated time for implementation.

Experiential Learning • The following examples represent multi-day experiences that students undertake, many of which are often deeply transformative. Some have a sustainability focus: China Experience Week, Project Weeks e.g. Mindful Adventure (students spent the week on Lantau island engaging in Yoga, Meditation, and daily hiking and water-based activities), Hong Kong Experience Week, Experiential learning in Primary through the Integrated Studies side of the curriculum.

Opportunities • As detailed above, the culture at CIS is very much focused on problem-solving. Addressing some of these challenges has created opportunities to become a more sustainable school and drive change in the right direction.

- For example, the challenge of heavy traffic-on the roads near the school has led us to implement mandatory bussing for students.
- With the approach of the school's 50-year anniversary in 2033, the leadership team and board of governors established 'Vision '33'. This was an opportunity to reset our focus and priorities, putting sustainability at the forefront as one of the school's key priorities moving forwards.
- The Sustainability Council is currently working on auditing the primary and secondary curriculum and this will lead to partnering with Education for Sustainability experts and Project-Based-Learning experts, to embed

a whole-school approach to sustainability education
- The challenge of pandemic travel restrictions means that further work can be undertaken by secondary students through a carbon literacy course.
- The current renovations to the school building are an opportunity to emphasis sustainability by installing BIPV and green walls.
- Working with the other schools in our neighbourhood is an opportunity to further sustainability initiatives and engender inter-school collaboration. This permeates through the whole community, not just faculty and leadership.
- Primary and Secondary school sustainability curriculum mission statements are being developed internally and will be rolled out in the latter half of 2022.

Threats • During the pandemic in Hong Kong, school has been conducted in person, online, or via a hybrid approach for over two years. Since January 2020, this changing platform has illustrated that we need a very flexible schedule that can be managed both online and in person. This can be a challenge for some sustainability practises; for example, ensuring maintenance of the school farm when students and staff are not allowed onto campus. However, CIS has tried to mitigate the impact of these by getting advice from local farmers; before the complete recent shutdown of school in January 2022, food was harvested by a socially distanced group of teachers and then donated. Longer growing and lower maintenance crops have recently been planted, in the hope that they will mature by the time the students can come back onto campus.

Stronger together - a community of practise for sustainable schools

Chinese International School is also one of the founding members of The Alliance for Sustainable Schools[93] (TASS). The Alliance is a non-profit network of schools working together to help accelerate the transition to a sustainable future through their shared committment to the principles of the Sustainable Schools Charter.

As a community of practise, The Alliance connects, aligns and amplifies the efforts and know-how of sustainabilty practitioners - including students - in schools around the region.

The Alliance leverages its collective influence and partners with innovators to catalyse systems change in four key areas: sustainable school food, sustainable school uniforms, sustainable school buses and sustainable school buildings. These issues can be addressed more effectively by schools working together rather than individually. The Alliance is also beginning to lobby organisations like the International Baccalaureate[94] (IBO) and other school accreditation and certification bodies (such as the Council of International Schools) to consider introducing sustainability as an accreditation requirement, as well as examination and curriculum bodies (IBO, Cambridge) to incorporate education for sustainability and sustainability literacy in their standards and curricula.

Strengths/prospects
- Strong leadership and vision
- Sustainability coordinators
- Ability to invest in sustainable solutions
- Seek External expertise where needed e.g. the Sustainability Audit (partnering with experts in relevant Sustainable Development fields – consultants, but in other countries this could also be universities)
- The challenges get turned into opportunities!

Challenges
- Logistics – making the interconnections, both with curriculum and extra curricula but also between the primary and secondary schools
- The IB subject choices provide fewer sustainability-related learning connections than the school would wish but it is consideraing an IB course focussed on environmental science and systemst
- Pandemic – delays in projects, audits and increased online learning led to difficulties, for example, running the school farm - but solutions were found!
- Harnessing and developing the sustainability expertise of school staff
- Complexities of mobilising a highly pluricultural community with different languages and perspectives all of which has now been thoughtfully addressed through the schools new guiding statements and strategic plan, thus prioritising sustainability through whole-school value sand commitments
- Financial challenges. Decarbonisation is a costly exercise. CIS isa well-resourced school, however funding still a constraint for large scale projects

Finland • Terälahti a Nature-school holistic integrated approach

Special thanks to Jenni Skaffari and Katri Korpi For this contribution

The Finnish school system is a little different to many other European countries. Tax revenue pays for the tuition of all students, so compulsory schooling is in principle free of charge for pupils/students. There is no private school system in Finland, and the law prohibits the pursuit of financial gain through education. Students receive free food lunch every day at school, and travel to school and back home, books and other supplies are also free for the students. No school uniforms are used in Finland. School starts at the age of 6. School days are relatively short; per week the hours are 22-24. Each lesson lasts 45 minutes, followed by a 15-minute break students spend outdoors.

The concept of a "sustainable future" is mentioned 48 times in the Finnish curriculum. The ecosocial education is central to the value base of primary and secondary school curricula and early childhood education. *"The guiding principle of ecosocial civilisation is to create a way of life and a culture that cherishes the inviolability of human dignity, the diversity and resilience of ecosystems, and at the same time builds a knowledge base for a resource-based circular economy"*[95]. The Finnish curriculum therefore strongly requires that a sustainable future is considered in teaching. It also encourages the whole school approach, which ideally would be a learning process for everybody in the school building (or surroundings). An ecosocial approach should be included in all school subjects according to the curriculum.

What happens in Dytiscus marginalis life? Let´s find out.

Educational professionals, e.g. the recruitment of teachers, can have a big impact on the functioning of sustainable education in schools. It is up to the teacher to put these values into practice. For example, school meals provide a great opportunity to discuss with students the importance of their own choices and food waste. It is also possible to get vegetarian food at the school. The autonomy provided by the curriculum to teach using different teaching methods and emphasise themes according to the teachers' own preferences, can cause dilemmas between curriculum and schoolwork. Among other things, this dilemma has been verified in Niina Mykra's dissertation[96].The teacher may not prioritise ecological sustainability themes in their teaching because the curriculum definitions are too broad.

Terälahti Primary School[97] • Terälahti School is a primary school in Tampere, located about 40 km from the city centre, surrounded by a lovely rural landscape with forests, fields and waterways. The school has about 75 students, aged 6-12. The same building also houses a kindergarten, library and the Nature School of Tampere, named Korento. There are about 14 adults working in the school building. The Terälahti school has been involved in the Green Flag program[98] (Finnish version of an Eco-School program) since 2002. Many things have taken root over the years in the daily life of the school, so there is little need to pay attention to them. These include sorting and recycling rubbish, saving energy and water, using recycled materials in fine arts and crafts, and using nearby nature as a learning environment. The aim is to make purchases as sustainably as possible.

However, there are some challenges. The biggest challenge of everyday life is time. It is difficult for a teacher to be away from their own class to hold for example an Eco-School committee meeting, but students would not be very excited if the meetings were always at their break times. This is a problem that almost all schools are struggling with. Some have made bold decisions, such as the Rovastinkangas school in Orivesi, where joining the school's environmental council is one of the electives that students can choose from.

Each school class, each autumn, votes for two class representatives to be on the Eco-School committee. The task of the student representatives is to bring ideas and thoughts of other students to the attention of the adults

Key WSA Principles in action at *Terälahti primary school*

Vision, Ethos, Leadership & Coordination

- As a nature-school a holistic integrated approach is central to the school's vision
- The school head teacher is hands on and support the teachers to meaningfully integrate sustainability into everyday school practice

Curriculum

- The national curriculum provides guidelines, but schools are independent in implementing the objectives of the curriculum through different teaching methods
- School arranges elective course for Eco-School pupil members
- Pupils have the opportunity to use their course time each week to work on individualised curriculums
- The sustainable future and eco-social education are cross-cutting values in Finland's curricula. Therefore, it is easy to organize such courses

Pedagogy & Learning

- The pedagogy of learning outdoors helps children to concretize challenges the world carries. In this way, students have better memories of learning and the connection between learning and their own lives
- One of the teachers dog acts as a school dog with pedagogical roles in the classroom

Institutional Practices

- Outdoor education is a central part of the school's everyday life
- Learning from nature is central to the school
- The Sustainability Education Development Project supports the change in the operating culture of education and training towards a more ecologically sustainable future
- Sorting garbage and saving energy is the minimum that all children and adults should be involved in

Community Connections

- A hut in Terälahti school field near to the river and an open shelter with fireplace can be found in the forest serve as meeting and relaxation places for nearby residents and pupils

Capacity building

- Many external actors provide training for educators and teachers online on SDG

in the school. Together the committee try to grasp feasible ideas and solutions to the issues and improvements that get suggested. A joint event for the whole school also takes place 2-3 times a school year, usually outdoors. As a small school, organising events is of great importance. Older students can work in more responsible roles because they have more experience with it. The smaller ones, on the other hand, take the model of the bigger ones, i.e. social skills are accumulated. Everyone learns to understand the difference and the good sides of each other and one another's strengths. They also learn how their own actions can influence the actions of the group. The head teacher also has a big impact on how a sustainable lifestyle is implemented in school. They can, for example, direct the teachers co-planning time to be for Eco-School planning or other sustainable education planning. It is important all adults at the school are involved in the planning, then the practices, etc., are transferred to the everyday life of the school.

The school administration can encourage a more ecological daily life, for example by pointing out the goals of global agreements to school plans. Guidance from the administration is often seen as a good incentive, but also too bureaucratic[99].

The principal could emphasise the school's engagement with the SDG in a job interview by asking, for example, about enthusiasm and experience in sustainable education work. On the other hand, the principal can do nothing to the fact that one of the issues complicating the work is the turnover of staff. In many Finnish schools, the employment contract of many teachers is fixed-term and sometimes short-term. Getting a permanent job is often difficult to achieve. Correcting this would require broader policy instruments. If half of the adults are new every year, time must be spent learning the old practices instead of letting them develop and create new ones. In many cases, however, new adults bring with them ideas and skills that can be used directly.

In almost all municipalities in Finland, Eco-School participation fees are paid from the common budget for basic education, not directly from the budgets of the schools. This is a good incentive to participate in the Eco-School program. Teachers are however burdened by the fragmentation of work. Many may see environmental issues and sustainable development as just one additional obligation, among other things. This is what it feels like if the organiser of the teaching (the municipality) requires you to fill in forms and different plans. Another dilemma which is also pointed out in Mykräs dissertation (p. 205). While these dilemas are apparent the school staff also emphasise that being one of the Eco- School it is worth it. "We are certified with our great work, and we really want to show it to everyone. We know it means we must document

our plans and to-dos. We also know that somebody actually reads them (FEE Finland) and want to encourage us to do better. If schools can´t get that kind of a feedback, they are often discouraged and see the "extra documents" as a burden. That is why sustainable development should also be the administrations business as well as the field workers" (Jenny Skaffari).

Nature-school of Tampere (named Korento) • Terälahti Primary School has a unique partner to work with. Korento Nature School is in the same building as Terälahti School. Nature schools are great examples of how basic education and early childhood education are supported in Finland in ESD. The nature school is part of the Tampere basic education. There are two environmental educators working at Nature-school. There are no full-time pupils/students at the nature school, but the nature-school operates as an additional service for Tampere schools and kindergartens. Especially in reinforcing the pedagogy of outdoor learning and ESD. Every day, the Nature School has different groups visiting Terälahti from Tampere schools and kindergarden/ preschools.

The pedagogy of learning outdoors has a strong connection to environmental education. In both, the emphasis is on strengthening the ecological dimension. The methods also emphasise experientiality and functionality. Students work hands-on. In fact, by searching, researching, and finding themselves students will have a better imprint on the theme of the day. At the same time, the relationship with nature is strengthening. Studies have also shown that learning in a green natural environment is more effective, whatever the subject is. (About Outdoor learning I). Teachers can also benefit from outdoor-teaching with students, e.g. because of the calming effect of nature and the effects on well-being.

The visiting group chooses a theme for themselves. The theme is implemented and considers the curriculum and subject objectives. The theme is addressed through the phenomenon. There are no separate subject lessons, but studying phenomenon brings for example, mathematics, environmental studies, exercise, cooperation skills and much more to the school day.

"Be enthusiastic on whatever you find outdoors. You can combine that with every school subject of your choice. What is this leaf? From where did it appear? Why it is on the ground? What colour is it? What forms do you see in it? How many veins it has? Why is it build that way? Let the pupils ask questions, you discover that they see the world more diverse than you. Learn from them. Learn together."
Environmental educator, Jenni Skaffari

"The teacher who visits in the nature school with a class also get tips and enthusiasm for outdoor learning pedagogy. Learning is multidisciplinary, experiential and exploratory. The learning environment is almost always nature. Korento Nature School and Terälahti School are located next to a magnificent forest and a soothing river. "We have the opportunity to bring experiences for students and teachers that they may not notice them during the normal school day, such as silence. Becoming aware of silence, too, can be a wake-up call for some individual to want help build a sustainable future. They may realise that there is still wonderful nature left here, this is something to enjoy" (Jenny Skaffari).

Examples from Terälahti Primary School
One of the teacher's dog acts as a school dog with pedagogical roles in the classroom. The pupils think the dog is just a top thing, even if it does nothing. Also, the cat of the teacher living nearby will occasionally hang out in the school yard and let the students stroke him. That makes

1) How does a miniature world look through a lens? What do you see? 2) Tyyne, the furry friend to lean on to when one struggles, for example in math

Terälahti unique compared to many schools. Students have a chance to relax next to a furry (little) friend during lessons.

"Terälahti school did a decaying test in autumn 2021. We buried various biowaste next to the school field. The aim was to find out how long it will take for even the smallest and most common biowaste to decay. We immediately noticed that nothing would disappear from nature in a couple of weeks. This was a surprise for many children, as well as for many adults. We also buried a mask and a tinfoil. It is no surprise to anyone that they are still there. This biowaste experiment also helped pupils understand that the amount of our food waste makes difference. We also discussed how these products of our choice have ended up as food for us. Terälahti is part of Tampere, the 3th largest city in Finland. However, Terälahti is located 40 kilometers from the city center, so we are in rural area. This has been an advantage for the Terälahti school when we have studied food production. In families of many pupils, cattle are raised or they cultivate. Food production is closer to their daily lives" (Katri Korpi, Terälahti primary school teacher).

There is a hut in Terälahti school's field near to the river. The open shelter with fireplace can be found in the middle of the forest. Both places serve as meeting and relaxation spots for nearby residents and pupils.

MAPPA .fi service • "Many Finnish schools' educators and teachers use Mappa.fi-material service website. At MAPPA-material bank teachers can find more than a thousand materials and tools for outdoor learning, environmental education and teaching a sustainable lifestyle. The MAPPA. fi service is a versatile entity that looks at things from different perspectives, the contents of which do not follow only one specific ideology"[100].

Multiple actors support basic education in Finland • For ESD, Finnish schools are also helped by The Finnish Association of Nature and Environment Schools that organises and develops LYKE-network. "The network offers environmental education services for schools and kindergartens on local level"[101]. Nature School Korento is part of this network.

The goal of the LYKKE-network is to promote sustainable lifestyles, environmental responsibility, and knowledge of nature, and to support outdoor teaching and functional learning. To achieve its purpose, the association coordinates and develops the national LYKE network, manages the MAPPA.fi service and acts as the coordinator and one organiser of the ULOS-UT-OUT major event. The activity is based on networking and the utilisation of group insights. As a result of the cooperation, impressive nationwide models will be created to increase the effectiveness of nature and environmental education. The 59 outlets of the LYKE network all over Finland have diverse communication channels for teachers and educators, and more than 200,000 children and young people and their teachers visit them every year.

Nature or environmental school activities refer to program services provided to groups of children and young people with the aim of promoting an ecologically sustainable future. Programs last at least an hour, usually several hours at a time.

Many other NGO´s also work with schools. The Finnish United Nations[102] organises supplement training for teachers in the SDG's. Online and hybrid training can be arranged so that teachers can participate easily on them. Nature School in Terälahti co-operates with them. Nature Schools in Finland also regularly organise teacher training on various pedagogical themes in sustainable education or outdoor learning. Teachers can also train to be an environmental educator. The program is part of the training leading to a special vocational qualification in the field of environment. It takes place in the Finnish Environmental College (SYKLI)[103], a nationwide vocational special education institution. Environmental training is suitable, for example, for those working in the field of education and counselling and training in the field of the environment.

Strengths/prospects

- The curriculum provides guidelines and encourages sustainability education. Teachers can decide the methods independently
- Students' enthusiasm to study with diverse learning methods and in learning environment
- The power of cooperation. For example, when teachers truly have time to plan together, there is a better chance on success of actions
- The municipality allows for independent support. Sometimes financial support, e.g. Green Flag (Eco school) participation fee
- Wonderful nature surroundings near the school

Challenges

- Teachers are burdened by the fragmentation of work
- Schools need the feedback on what they do for ESD. Otherwise, they can think of it as a burden and extra work. That is why sustainable development should also include administration as well as the field workers
- Engaging everybody with ESD is a challenge
- There is no time resourcing in schools. It is the biggest challenge to the work of ESD
- There isn´t enough time to work with the subjects the teachers would rather work with

III Synthesis & Closing remarks

Synthesis

In synthesising the exemplary school cases highlighting a WSA to Sustainable Development, we can ask some critical questions:

- **How do we ensure a WSA is inclusive and not off-putting in its scale, while still instilling the complexity of moving towards a 'whole system re-design'?**
- **What can we learn from different schools' experiences with engaging in holistic integrated sustainability-education?**
- **While a lot remains contextual, what similarities/ trends can we see emerging and how can this influence shifts in top-down school policy?**
- **How can the wider policy contexts and frameworks in which the cases are nested support a WSA?**

The exemplary cases reveal some striking similarities as well as noticeable differences with regards to these questions. The similarities lie in the commitment of staff in providing education that is relevant to the students and today's challenges, but also in practising education that is responsible in its aim to contribute towards a more caring, healthier and sustainable world. Such education typically implies boundary crossing between disciplines, school and community, perspectives, timescales (past-present-future), and spatial scales (local-regional-global). All schools emphasise the importance of students' agency, their ability to make change, and of their participation in decision-making. Many of the schools also mention benefiting from some kind of supporting framework and/or network like Eco-Schools.

There are also differences. Some of these are a result of the context in which schools are nested, which varies; from more rural to heavily urbanised; from more privately funded to more publicly funded; from being nested in a healthy policy-environment conducive to a WSA; to being deprived from any policy-support, some are even hindered by educational policies. Instead, they are working on their own, with the support from NGO's, networks and others, relying heavily on internal assistance and the support of the local community. Other schools work on a small scale from the ground up, while others work on a much bigger scale nested in a long school tradition that create both top-down accountability and bottom-up commitment.

In this closing section we will first distil some key overarching 'lessons learned' and touch stones for each of the six strands of the WSA flower, as depicted in the introduction of this report.

Vision, Ethos, Leadership & Coordination • In firmly established schools, introspection and recognising that it is important to become 'unstuck' and to 'unlearn,' are important steps in realising a transition in the school. This allows for new forms of teaching and learning, and a regeneration of school-community relations. Continuous or frequent dialogue between different stakeholders (students, teachers, managers, parents, local organisations, etc.) needs to take place in regard to what is important, how people can contribute, obstacles, what can be done to overcome challenges, etc. Having systems in place that provide some continuity, for example monthly professional development meetings, regular dialogue meetings, local community stakeholder meetings and even networking events, is vital to counteract issues that arise. Creating space for dialogue also implies that teachers' daily schedules need to provide time for this.

Active and interested parents, along with a nurturing local and or regional government seeking to realise its own policy objectives in relation to health, citizenship, climate action, etc., can create a healthy environment for a WSA to sustainability. An ethos that allows for strong school-parent relations is important to this. Some of the schools also have a school ethos and vision deeply rooted not just in the community's day to day life, but also in culture and history.

It is evident that for a WSA to be fully realised, schools need both the financial and structural support, and that different actors, with a similar vision, benefit from working and co-supporting each other. School leadership must recognise that working in more open, localised, place-based, interdisciplinary, and action-oriented ways is often new and intensive and there is always a risk of teacher and staff burn-out. Inspirational, visionary, caring and nurturing leadership can be one key success factor in realising a WSA to sustainability. In addition, providing support by means of a school sustainability coordinator who can provide extra support is crucial.

Curriculum • Connecting the curriculum to the UN SDGs, not only provides legitimacy, but also offers an opportunity for inquiry-based learning, systems thinking, making connections between local and global issues, and for studying contradictions, tensions and ambiguities. The SDGs can also act as a catalyst for inter and transdisciplinary work where the different subject areas

need to be connected. Finally, the SDG's can provide a school and their local community with meaningful action-oriented activities that combine multiple forms of learning and utilise the outdoors. At the same time, we also see schools do this without using the SDGs in an explicit way.

Some schools successfully focus on circularity, closing cycles, and creating very practical local 'micro economies' that generate funding for future sustainability efforts. Harnessing and harmonising with the local ecology, cultures and history can help reveal and acknowledge both negative and positive practices and approaches to help create a more sustainable and community orientated curriculum that meets the needs of both the people and planet.

While sustainability can be embedded in different courses, many schools also opt for the organisation of highly visible special curriculum activities – like a sustainability project week – that include all teachers and all students, but also invite outside experts and stakeholders from the local community. Many schools engage in, what might be called, a holistic integral curriculum design that involves the land and place in which a school is situated, bringing in craft work and arts-based approaches, and utilising sustainably sourced and local materials where possible. This encourages situated and embodied learning for the whole human being and the whole community.

It must be recognised that the establishment of a more localised curriculum, as well as the introduction of new forms of teaching and learning (see next section), is often unfamiliar to most new students. It takes time to build agency, confidence and trust in these new approaches, also among the parents. Often, the more open and localised curriculum can also be frightening for teachers who like to maintain control and want to know exactly in advance what will happen and what is learnt. They will need to have more faith in the abilities of their students, the power of 'letting go' and providing space for emergence. Here also lies a challenge for teacher training and professional development.

Pedagogy & Learning • A common thread is that schools highlighting a WSA tend to use a broad range of learning grounds, strategies, multiple intelligences and diverse perspectives to tap into student strengths and interests. Schools point out that a shifting from being a "teacher of content" to being a "facilitator of learning" changes engrained power dynamics with students, as well as approaches to lesson planning: Students' voices need to be taken more seriously and the design of a lesson, activity or project, needs to allow for surprise and deviation. One way some schools do this is to start learning for sustainability with very basic localised and existential questions like: "What's going on out here?" They think about the curriculum together, become aware of every-day issues, some explicitly present, others more implicitly, ask questions including uncomfortable ones, find community organisations involved in sustainable practices and partner with them in a concrete project that is co-shaped by the students.

Vocational schools have a lot of experience with embodied, hands-on, activity-oriented forms of learning that utilise the local environment and require working with local stakeholders. Non-vocational schools can benefit from the way these schools work.

Many schools combine multiple forms of learning (inquiry-based, action-oriented, investigative, etc.), utilising the outdoors or the out-of-school environment as a living laboratory where students can experiment with making change and trying to have a positive impact. Essentially, a WSA opens the possibility of the world becoming our teacher, where the craft process can reveal and meet both our challenges and potentials through an active dialogue between individual and world. Some schools provide time and space for mindfulness, yoga and meditation as critical for achieving, what might be referred to as, 'inner sustainability'.

Many schools point at the importance of giving students a voice and listen carefully and attentively to their needs; what they want to change, how they envision their school and their community in the framework of sustainability. It must be recognised, however, that students often enter the school with years of training in a more traditional "banking" model[104], where they are not required to participate, and where test grades are the primary measurement of success. As a result, it will often take time to cultivate another mindset in relation to education and learning.

Some schools point at the mismatch between what national exams ask for and what students need. As a result, space for innovation in pedagogy and learning but also in developing alternative forms of assessment, is limited. Alternative forms of monitoring, research and evaluation, e.g. action-oriented research projects that seek to address the policy-practice contradiction that exists between school commitments and regional and national curriculum requirements, are highly necessary in many cases.

Community Links • Partnering with community organisations with a sustainability focus makes learning authentic, rich, deep and meaningful. It helps when the local community fully supports the school's WSA to sustainability. In making community connections, developing new forms of learning, using the school and the community as a resource for teaching and learning, collaboration with an NGO with expertise in, for instance ESD and the WSA, can be instrumental. Many schools

featured in this report, have the benefit of working closely with a network and framework such as EcoSchools. Some schools have identified learning places and spaces as well as local organisations that together create alternative learning environments for students. There are various places in the community where students can learn beyond the framework of the school. This is very important so that the school does not have to take on everything. Collaborating with the local community and various stakeholders, including those representing the private sector, is vital in both its implementation and impact. Peer-learning and establishing networks of collaboration between neighbouring schools strengthen the idea behind WSA. It can increase the motivation and joint learning between schools needed to root and strengthen a WSA to sustainability. Collaboration with local or regional universities, especially with teacher education and educational design research programs, can support such partnerships.

Capacity Building • Transitioning to a whole-school, project-based learning model can be difficult and time-consuming for teachers and staff. It is important for teachers to feel that they are not obliged to implement sustainability or ESD. They must be self-motivated in order to engage actively. Supporting them in this direction is a critical factor for their empowerment and motivation. The unpredictability of a project-based environment can be unsettling and physically draining for unaccustomed teachers. It is essential to build in supports such as mentoring sessions, extra planning time, and ongoing professional development.

Working in partnership with other schools in the region to allow for peer-to-peer inter-school learning between teachers but also between school leaders is vital. Peer-learning and establishment networks of collaboration between neighbouring schools strengthen the idea behind WSA, which sees schools as an open community of sustainability-oriented learning. Providing a structure for long-term multistakeholder partnerships locally and or regionally which support a WSA can deepen and broaden its impact.

Institutional Practices • Most schools featured in this report have been operating for many years, and therefore it can be a challenge to alter deeply ingrained and resilient patterns, structures and routines. In turn, the new or recently established schools have the luxury of starting from scratch, with a high level of freedom and ample opportunity to bring in multiple voices in the design of the school and the shaping of its practices.

Scale also makes a difference. A smaller school can be more agile and responsive as lines are short and relationships can be established more easily. Bigger schools place high demands on organisation, structure and management, and therefore the question is posed: How to create intimacy, distributed leadership, and ownership in bigger schools? In bigger schools, some form of coordination through an eco-committee or an ESD-focal group can help in realising this. Commitment from school management is critical, especially for giving change agents – like passionate teachers or students – the freedom to initiate and experiment. In experimenting with a WSA, failure is bound to happen, in that not all the changes made will succeed, so there needs to be a culture which responds positively to failure.

It helps when budget and other resources are allocated for the professional development of staff, greening the school building and school grounds, and for community engagement and outreach. It is through the local surroundings becoming an extension of the traditional classroom that a WSA, especially 'walking the talk' comes alive. In addition, time, patience and perseverance are other important factors. In all the featured cases, there is commitment to a WSA, but often there is still a long way to go to embed a WSA in the whole organisation involving all staff and students. Making progress visible – for instance, by looking back every-now-and-then and having a monitoring system in place – can help keep energy levels and motivation high.

All schools seem to highlight the 'walking the talk' component of a WSA to SD. Many examples are provided of schools working on energy, food, health, greening, inclusivity, democracy, creating outdoor classrooms, school gardens, and much more.

Some schools have a participatory approach in deciding what to focus on and how by encouraging students' active engagement in the developing of a school action plan. It's important to give them a voice and listen carefully to their needs, what they want to change, how they envision their school and their community in the framework of sustainability. It is crucial for schools not to just develop and implement a school action plan, but also to identify measures that will sustain the actions and that will provide feedback, also in terms of what successes are achieved.

Still, it is noted that inconsistencies remain present in terms of sustainable 'actions' and policies not always matching up with what is being taught.

Creating Healthy Policy-Environments for a WSA to SD

Perhaps a missing strand in the WSA flower is one that refers to the policy environment in which a school is nested. This policy-environment can be a barrier or a lever in creating sustainable schools. Efforts can be seen throughout the world in curriculum reforms and school

policy changes supporting a WSA. Terms like a Whole Government Approach to Sustainable Development are found beyond education institutions, such as The European Commission's 2019-2024 policy for the 2030 SDG agenda[105]. However, many schools highlight the constraining effects of a national curriculum, where the focus is on testing and measurement of mainly cognitively oriented learning goals, a culture of accountability, lack of time for experimenting and doing research, to name a few. The schools featured in this report have either found ways to overcome such constraints, or they have the fortune of being in a policy environment that encourages multiple forms of learning, engagement in community, doing research as a part of professional development and creating a more localised curriculum.

In figure 2 below we have added this policy-environment as a wider circle in which a WSA is nested, highlighting some of the key points the exemplary cases reveal.

Closing remarks

What is striking and encouraging is that the cases presented are only a small selection out of a range of other examples. The response to the rather short call for exemplary practices (there was only about two weeks to respond) was overwhelming and a more systematic call using even more well-established networks would undoubtably have yielded more cases. The WSA seems to be moving from the margins to the mainstream of education. These cases represent niches that, when combined, can become a movement which can transform the wider education system. There might be a tipping point where the ways these schools live and breathe sustainability, while maintaining a critical and flexible mind, becomes the new normal in our schools.

Figure 2: Healthy policies for enabling a Whole School Approach, adapted from Wals & Mathie (2022)

IV Appendix

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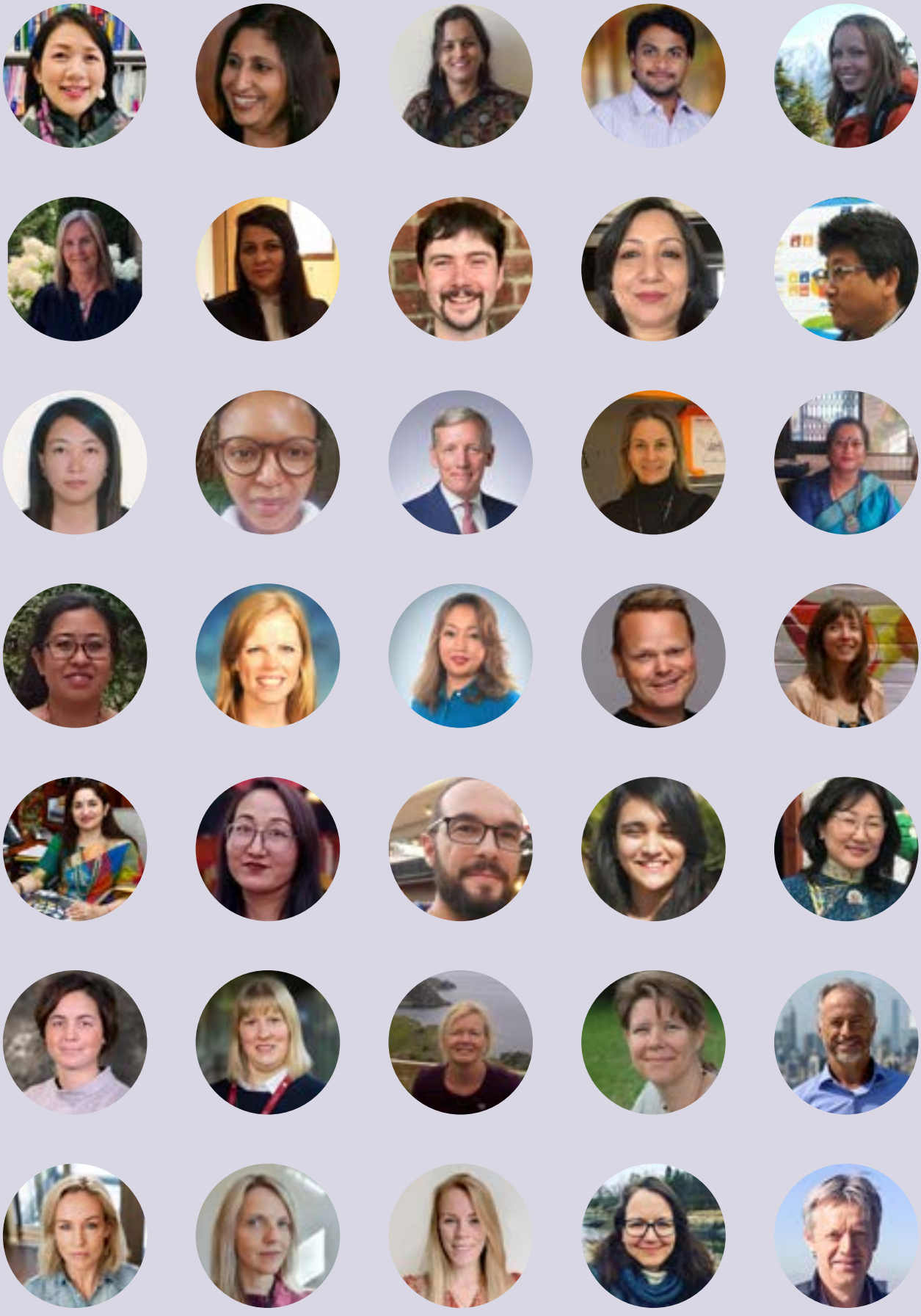


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